

# ADMINISTRATION REPORT

WITH THE COMPLIMENTS  
OF THE DIRECTOR  
DEPARTMENT OF AGRICULTURE  
TRINIDAD & TOBAGO

## DIRECTOR OF AGRICULTURE

FOR THE YEAR 1954



COLONY OF TRINIDAD AND TOBAGO

*COVER ILLUSTRATION* : Banana Nursery of the Department of  
Agriculture at Golden Grove.



ADMINISTRATION REPORT  
OF THE  
DIRECTOR OF AGRICULTURE  
TRINIDAD AND TOBAGO  
FOR THE YEAR 1954

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DEPARTMENT OF AGRICULTURE, TRINIDAD AND TOBAGO  
SCIENTIFIC AND TECHNICAL STAFF

(As at 31st January, 1955)

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| <i>Fish Culturist</i> ...     | ... | ...J. S. KENNY              |
| <i>Fishery Assistants</i> ... | ... | ...F. O. ASSAM              |
|                               |     | 2 VACANT                    |

In addition there are:

127 FIELD ASSISTANTS  
 3 SCIENTIFIC ASSISTANTS  
 1 LABORATORY ASSISTANT  
 2 JUNIOR SCIENTIFIC ASSISTANTS

#### COCOA BOARD

|                                                                  |              |                                              |
|------------------------------------------------------------------|--------------|----------------------------------------------|
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| <i>Rehabilitation Officer</i> ...                                | ...          | ...A. E. PUGH                                |
| <i>Officer-in-Charge, La Pastora<br/>Propagating Station</i> ... | ...          | ...P. C. SCANTLEBURY                         |
| <i>Officer-in-Charge, King's Bay<br/>Propagating Station</i> ... | ...          | ...F. TURPIN                                 |
| <i>Officer-in-Charge, Marper<br/>Propagating Station</i> ...     | ...          | ...C. A. PHILLIPS                            |
| <i>Officer-in-Charge, La Reunion Estate</i> ...                  | G. LA GRENAD |                                              |
| <i>Chief Cacao Subsidy Inspector,<br/>Tobago</i> ...             | ...          | ...E. A. BLACK                               |
| <i>Senior Cacao Subsidy Inspectors</i> ...                       | ...          | ...E. A. BRUNTON<br>J. H. DEANE<br>F. LEZAMA |
| <i>Experimental Officer</i> ...                                  | ...          | ...C. A. SAMAROO                             |
| <i>Supervisor of Estate Propagators</i> ...                      | ...          | ...VACANT                                    |

In addition there are:

31 FIELD ASSISTANTS

#### MARKETING BOARD

|                                         |     |                                                               |
|-----------------------------------------|-----|---------------------------------------------------------------|
| <i>Assistant Marketing Officers</i> ... | ... | ...L. C. FARRELL<br>F. A. RAWLINS                             |
| <i>Engineer Supervisor</i> ...          | ... | ...W. A. FLOOK                                                |
| <i>Senior Marketing Assistants</i> ...  | ... | ...F. A. BAIN<br>J. FERNANDES<br>J. GONZALES<br>A. U. MASSIAH |

In addition there are:

36 MARKETING ASSISTANTS





## INTRODUCTION

SHOWERS during the first quarter were sufficiently heavy, in some areas, to interfere with land clearance and cultivation. Wet and dry spells alternated throughout the second quarter and the heavy rains did not set in until July. Dry spells occurred towards the end of August and early in September. The rainfall during November and December was above average and particularly heavy downpours occurred which caused severe flooding. The heavy rains towards the end of the year had a serious effect on what promised to have been the largest cacao crop for the past ten years. In general, the weather was not ideal for the citrus and coffee crops or for the production of corn, ground provisions and the cultivation of rice.

The labour supply situation remained unchanged during the year and local shortages again occurred in some areas.

The strike which occurred early in November, among factory workers on the sugar estates, threatened to affect the start of the 1955 crop. An agreement was, however, eventually reached, in late December, between a union and the sugar manufacturers, permitting the crop to start on time.

Towards the end of the year, the salaries and wages of Government employees were increased retrospectively to the 1st January, 1954. The implications of this, to the agricultural industry as a whole, may not yet be fully evident.

The unfavourable weather and limited dry season were reflected in the lower volume of local ground provisions and corn reaching the market. The corn crop was a poor one and supplies of ground provisions were not as abundant as in 1953. Markets were fairly balanced, however, and supplies were maintained by importations of ground provisions from other West Indian Islands and corn from abroad.

Fair supplies of green vegetables and pigeon peas were produced.

Despite the lateness of the rains and the wet weather at harvest time, good yields have been reported from rice-growing areas and the crop has been at least an average one.

Preliminary figures indicate that the value of agricultural exports during 1954 increased by some \$5,905,354 (12 per cent.) on the 1953 figure (\$47,335,468) to a total of \$53,240,822. The most significant increases occurred in the quantity and value of sugar (by 20,308 tons and \$2,096,064) and its by-products, rum and molasses (by \$423,812) in the quantity and value (by 714 tons and \$2,034,771) of coffee and in the value (\$3,377,462) of cacao exported.

Sugar production reached the record figure of 172,767 tons. This was 20,149 tons more than the quantity produced in 1953 and 13,632 tons more than the previous peak output in 1949.

Due to unfavourable weather at the time of flowering, the 1953-54 citrus crop proved to be much smaller than that of the previous season and, therefore, there was an appreciable decrease in the value of citrus exports (by \$1,398,725). The uncertainty of markets for this expanding industry still remains a cause of concern to producers. The agreement between the United Kingdom and United States Governments regarding surplus American citrus supplies and the discussions which took place in London led to an investigation of our citrus industry by a Fact-Finding Mission, towards the end of the year. The Mission's report is awaited but the necessity for the early formation of a British West Indies Citrus Association is clearly indicated.

There was also a decrease in the export value of coconut products and their derivatives (by \$124,401), in particular unrefined coconut oil, as the quantity produced was almost entirely absorbed locally. By past standards, the crop was a fair one and the prospects for 1955 are favourable. While prices have remained stable, the need for their maintenance, through some form of long-term agreement, remains a matter of concern to producers. This industry is, at present, the one most seriously threatened by disease and, although no satisfactory method has yet been evolved for the control of "Red Ring", investigations are being given priority by the specialist officers of this Department.

Decreases also occurred in the quantity and value of a number of minor agricultural exports but comparisons should be made over a period than rather with 1953 alone, which may be regarded as a bumper year.

Though limited as yet the increased quantity and value (by 1,357 tons and \$161,020) of fresh fruit and bananas exported is noteworthy.

With satisfactory prices ruling for sugar, cacao, coconuts and coffee, 1954, in general, was a good year for crop producers.

Despite the uncertainty of the position in the citrus industry and the insecurity in the coconut industry, the prospects for the future remain favourable, although a cessation in the upward trend of sugar prices, which reached its peak in 1953, may be anticipated and the exceptional coffee prices, which have been prevailing, are likely to settle down at a lower level.

The prospects of developing a banana industry, which were indicated in the previous year's report, have been confirmed. The signing of a 15-year contract for Cavendish bananas with the Union International Company of Great Britain, the clear interest of that Company in establishing itself as a producer, as well as a shipper, the most satisfactory reports which have been received on three trial shipments and the progress made by the agricultural community as a whole in the new development are most encouraging. The

significance of this contract, which will result in the regular service of a line of refrigerated ships, to the agricultural industry as a whole, has yet to be fully appreciated. The main limiting factors to development at present are the supply of planting material and the need for improved methods of cultivation while the establishment of a satisfactory programme for Leaf-spot control must be regarded as an essential to sound expansion; this matter is receiving active consideration.

The general position as regards animal husbandry, during 1954, was a satisfactory one. There is now clear evidence, in the increasing numbers of all classes of livestock and poultry which are becoming available for sale from the farms of the Agricultural Department, that the recommendations of the Local Food Production Committee are being implemented. As a result of this and of the steady increase in supplies of breeding stock being marketed privately, there has been a noticeable expansion in the livestock population particularly as regards pigs and poultry.

The animal health position also remained satisfactory, with the exception of paralytic rabies. This disease assumed major significance during the year, particularly among cattle, and heavy losses occurred. The incidence of bovine tuberculosis continues at a very low percentage and the Colony was once more free from swine fever.

One of the most significant developments which took place during the year was the opening of the Eastern Caribbean Farm Institute.

Education in improved farming methods is the most urgent need in the agricultural industry today and the lack of facilities for training junior field staff in the Department has until now remained the main obstacle to meeting this need. At present, the Institute has only the capacity to absorb junior staff of Agricultural Departments in the Eastern Caribbean for some time to come but, due to the urgent need, its capacity may shortly be increased and it is hoped that in the not too far distant future private students, who intend to make agriculture their career, will be able to afford themselves the opportunity of a sound local agricultural training course.

## AGRICULTURAL POLICY

The recommendations of the Agricultural Policy Committee continued to be followed and during the year the energies of the Department were again directed towards the active implementation of the recommendations contained in the Interim Report of the Local Food Production Committee (Council Paper No. 46 of 1951).

2. The Local Food Production Committee did not meet during 1954.

3. As in previous reports, the recommendations of this Committee are reproduced below and brief notes are included which indicate the action which has been taken. Reference to subsequent sections of this Report will provide information in greater detail.

## GENERAL

(1) *Optimum use of the land for the purpose to which it is best suited, to be the basic condition of the measures to be pursued.*

(2) *Increase in local food production to be undertaken as an integral part of a long-term project aimed at placing all phases of local agriculture at the highest sustained potential, while ensuring that, in case of a shipping crisis, adequate food would be available.*

(3) *The agricultural education of the rural population to be a major function of the Extension Division of the Department of Agriculture.*

(4) *Complete self-sufficiency in all respects not being a sound objective, either economically or sociologically, and the increase of exports being essential for maintaining the rising standard of living of the growing population, a proper balance to be maintained between production for local consumption and production for export.*

(5) *The scope of the Agricultural Credit Bank to be widened to enable loans to be issued for fisheries development and for the manufacture or processing of agricultural or fishery products.*

## LEGISLATION AND ITS ENFORCEMENT

(6) *Controls on the prices of locally-grown foods, of vegetable, animal and fish origin, to be removed; in the case of vegetable products, adequate notice to be given so that growers may produce in anticipation of the date.*

Action was continued as in 1953.

(7) *More rigid permanent legislation on Praedial Larceny to be enacted.*

The necessary legislation now falls under two Ordinances—

(a) The Summary Offences Ordinance; and

(b) The Sale of Produce Ordinance.

Legislation under (a) has been enacted; that under (b) awaits enactment.

(8) *Copra to be added to the list of "licensable produce" in the Sale of Produce Ordinance, Ch. 23. No. 17, and the provisions of the Ordinance, especially in respect of dealing in licensable produce only at licensed premises, to be strictly enforced.*

Draft legislation has now been prepared and is being considered by the Legal Department.

(9) *The amendment of Income Tax legislation and/or its application to provide remission of tax for expenditure incurred in the establishment or rehabilitation of new crops and in the repair or construction of buildings for agricultural purposes.*



The report of the special committee appointed in 1952 to review and report on this recommendation has been favourably considered by Executive Council and steps are being taken to have the necessary legislation drafted.

(10) *The slaughter of heifers and cows, under ten years of age and not condemned by a Government Veterinary Officer, to be prohibited and the prohibition strictly enforced.*

Implementation as in 1953.

(11) *A much wider range of responsible persons to be empowered to issue permits for setting fire and their names and addresses to be fully publicised.*

Implementation as in 1953.

(12) *A much wider range of responsible persons to be appointed Members of Fire Vigilance Committees and Officers of the Agricultural Department to be included in the list in Section 18 (1) of Ordinance No. 11 of 1942.*

Implementation as in 1953.

(13) *Legislation to be enacted which will provide for a wider range of bodies to be registered than that permitted under the existing Co-operative Ordinance which only provides for Agricultural Societies (fishermen's co-operatives, for example, being excluded under the present law).*

Implementation as in 1953.

(14) *Measures to be taken to enforce the existing legislation in regard to the sizes of mesh used in fish nets and seines.*

Action on this recommendation has been suspended in the absence of statistics showing the need for it.

(15) *The existing legislation on the rental of agricultural land which, as now worded and interpreted, discourages private proprietors from renting lands, to be reviewed and amended so that unused land may be more readily rented for short periods.*

Implementation as in 1953.

(16) *Authority to be conferred upon the appropriate officer of Government empowering him to limit the importation of "white" or "Irish" potatoes at periods of maximum production of local starchy foods.*

This recommendation will be implemented as soon as the volume of locally produced food expands to a sufficiently high level.

The control measures which it will be necessary to introduce have already been devised by the Department of Industry and Commerce.

(17) *Limitation of the movement of animals to and from Tobago, except insofar as may, at times, be required as a quarantine measure, to be entirely removed. (Tobago should be regarded as an integral part of the Colony analogous to Cedros and no more remote).*

Implementation as in 1953.

(18) *The rebate of tax on gasoline, which is now restricted to the operation of tillage, to be extended to those of weeding, under-brushing, harvesting (including forage harvesting), binding and threshing, but not haulage, and to the fuel used by the engines of commercial fishing craft.*

Sixty-seven thousand dollars has been provided for the implementation of this recommendation as far as commercial fishing craft are concerned. Consideration is still being given to its application to agricultural operations.

(19) *The policy in regard to Crown lands should be one of orderly and progressive development based on the following general principles :—*

- (i) *Lands to be used for the purpose to which they are best suited;*
- (ii) *Lands to be leased and not sold;*
- (iii) *Leases to be of a probationary type at first, to be followed, if the tenant prove satisfactory, by a long-term renewable lease;*
- (iv) *All leases to embody an approved and agreed-on programme of work and development; the execution of which will be a condition of continued tenancy;*
- (v) *The rate of alienation to be strictly co-ordinated with the Staff available for inspection, both initial and periodic recording, mapping, &c.;*
- (vi) *Shifting cultivation to be avoided and emphasis placed on permanent long-term residential occupation;*
- (vii) *Size of holding to be such that, as a minimum, whole-time occupation be provided for the lessee.*

Implementation, by the District Services Division, of the policy referred to in the 1952 Report continues and the progress made is indicated in Table I.

(20) *Where land is available in the vicinity of towns or large villages, a limited number of allotments to be made available for employed workers who wish to grow their own food.*

Implementation as in 1953.

(21) *Private interests to be encouraged to bring the maximum acreage into cultivation by action under the following recommendations:*

|                                                                                            |     |                 |
|--------------------------------------------------------------------------------------------|-----|-----------------|
| <i>Acceleration of Cacao Rehabilitation</i>                                                | ... | <i>See (4)</i>  |
| <i>Income Tax Concessions</i>                                                              | ... | <i>See (9)</i>  |
| <i>Removal of Price Controls</i>                                                           | ... | <i>See (6)</i>  |
| <i>Control of Praedial Larceny, and</i>                                                    | ... | <i>See (7)</i>  |
| <i>Amendments to the Control of the Rents of<br/>Small Agricultural Holdings Ordinance</i> |     | <i>See (15)</i> |

(22) *The Land Settlement plan for the next five years to be pursued, care being taken to equate land settlement projects to the Agricultural Staff available for supervision, it being beyond the slightest doubt that such projects can only succeed where strict enforcement of the best agricultural practices prevails.*

Implementation of this recommendation continues and the progress made is outlined in a later section of this Report under the heading Land Settlement.

(23) *The wage-earning public, as distinct from professional farmers, to be encouraged by propaganda and advice to utilise their backyards and gardens for growing some portion of their food, vegetable or animal.*

Implementation as in 1953.

(24) *Government Departments and Private Occupiers to be encouraged to plant trees which produce some sort of food (breadfruit, mango, coconut, &c.) on all idle land and when, for purposes of controlling soil erosion, or for windbreaks, shade, &c., it is desirable to plant a tree or trees.*

Implementation as in 1953.

(25) *Government to accelerate the provision of additional rice lands and the amelioration of drainage and irrigation on existing rice areas, as may be recommended by the Standing Rice Committee.*

Work on the four major Rice Expansion Schemes continued and towards the end of the year two F.A.O. Drainage Experts arrived in the Colony to advise on the reclamation of the main swamp areas and on the current Rice Expansion Schemes. Except for further levelling work, the 125 acre irrigated block on the Central Experiment Station has been completed. Further details are contained in a later section of this Report.

## UNITED STATES BASES

(26) These areas remained under the control of Government.

### *Waller Field :*

One hundred and sixty-eight garden allotments were tenanted and 106 remained vacant. With the exception of a block of about 80 acres of abandoned cocoa which is being held in reserve for an Agricultural Credit Society, sponsored by the Commissioner for Co-operative Development, all the land under permanent crops has now been rented out.

### *North Manzanilla :*

Eighty-four of the 120 holdings are now tenanted. It is expected that the remainder will be taken up during 1955.

### *Carlsen Field :*

Of the 900 acres leased to Woodford Lodge Estate, an appreciable amount has been rented to canefarmers and observation plots of various grasses and cover crops have been laid down. Regularisation of the tenancies of squatters is being carried out by the Warden.

## ANIMAL HUSBANDRY

(27) *Government to invest \$450,000 in the purchase and erection of a building and plant for converting citrus waste into a stockfeed ingredient.*

The plant began operations during the year and about 800 tons of stockfeed were manufactured. Further reference to this is made in a later section of this Report.

(28) *The Department of Agriculture to suspend the sale of female stock (more especially cows) for one or two years so as to increase its herds permanently, thus ensuring a marked increase in the numbers offered for sale, annually, thereafter.*

During the year the herds of the Department of Agriculture had reached a state of development which permitted the sale of cows and heifers to the public. The general increase in the number of all classes of livestock sold during the year is referred to in a later section of this Report.

(29) *The Department of Agriculture to purchase 25 buffalo heifers, locally, and from abroad, 200 cows, 100 sows, 100 ewes, 100 does and 300 hens, for the production of increased numbers of progeny for sale to the public.*



Implementation of this recommendation continues. Total purchases of imported breeding stock from 1952 to 1954 inclusive have been as follows:—

|                                                |     |     |     |     |     |
|------------------------------------------------|-----|-----|-----|-----|-----|
| Cattle                                         | ... | ... | ... | ... | 197 |
| Does                                           | ... | ... | ... | ... | 45  |
| Ewes                                           | ... | ... | ... | ... | 75  |
| Sows                                           | ... | ... | ... | ... | 77  |
| Day-old chickens (White Leghorn<br>and R.I.R.) | ... | ... | ... | ... | 424 |

In addition, 14 water buffalo heifers were purchased locally during 1953.

(30) *The Department of Agriculture to add three Junior Livestock Inspectors to its Staff and to take measures to enforce strictly the regulations prohibiting the slaughter of fertile cows.*

Implementation as in 1953.

(31) *The Department of Agriculture to be allocated a revolving fund of \$10,000 to be used :—*

(i) *for the purchase of fertile cows whose sale for slaughter has been stopped;*

(ii) *for the importation of breeding stock for stockmen who place firm orders.*

(i) This recommendation has been implemented.

(ii) This recommendation has not yet been implemented. Funds have been made available but no demand has been received.

(32) *Operators of large estates to be invited to grow, as a minimum, the feed needed for their own herds.*

Implementation as in 1953.

(33) *The Marketing Board (a) to increase the number of points at which it sells stockfeeds and its publicity in regard to same; (b) to purchase molasses at the rate agreed on for local distilleries (thus ensuring an unlimited supply) and to sell same in its various depots.*

Implementation as in 1953.

(34) *The Department of Agriculture, or private interests under its control, to test the feasibility of establishing pastures on the less fertile soil types of the former American Bases (when Government shall have received reconrol of same) and to make recommendations on the results of the experiments.*

This recommendation is being implemented. Observation trials are being carried out on Carlsen Field and, for convenience, on land adjoining the O'Meara Breeding Unit. This Station is close to the Waller Field area and contains land of the same soil types. Reference to this work in greater detail is made in a later section of this Report.

(35) *The Department of Agriculture to be provided with an additional Veterinarian.*

This recommendation has been implemented.

(36) *Veterinarians of the Department of Agriculture to undertake private work, on a fixed scale of fees, on farm animals (domestic pets excluded) located more than 20 miles from the home of an active private Veterinarian, and to pay the fees earned into Revenue.*

This recommendation has been implemented although the service is restricted to a radius of 15 and not 20 miles.

(37) *Government Veterinarians, undertaking private practice, to be a fixed non-pensionable allowance and provided with a revolving fund of \$500 for drugs.*

This recommendation has been implemented and the sum of \$1,200 has been allocated for the purchase of drugs.

(38) *The Department of Agriculture to establish six additional breeding units in 1952, and to be allowed to let out their construction on contract.*

The breeding units at Balmain (Couva), Princes Town, Charlotteville (Tobago) and Northside (between Parlatuvier and Bloody Bay, Tobago) started operation in 1953. The unit at Coryal, St. Andrew, is now in operation and the buildings of the sixth Unit at Tournebride Estate, Mayaro were practically completed by the end of 1954.

(39) *If two milk processing plants are to be established in the Colony, consideration to be given to one of them being set up in Tobago.*

A committee under the Chairmanship of the Deputy Director (Animal Husbandry) sat during 1954 to consider the question of establishing Milk Processing Plants. The Committee has recommended that a plant be established in the vicinity of San Fernando and this matter is receiving consideration by Government.

(40) *Funds to be provided for the expansion and modernisation, in stages, of the stockfeed mixing plant at St. Joseph.*

This recommendation has been implemented.

## CROP HUSBANDRY

(41) *The Cocoa Board to be invited to accelerate rehabilitation by :*

(i) *Erecting more propagating units (with a capacity of 5,000 plants upwards) on private lands;*

Four new estate propagators with a 10,000 plant capacity and a fifth with a 15,000 plant capacity were erected during the year. In addition the propagator at Non Pareil Estate was extended to a capacity of 60,000 plants per annum (30,000 plants previously).

(ii) *Increasing the percentage of the total area eligible for rehabilitation grants beyond the 10 per cent. now allowed.*

Implementation as in 1953.

(iii) *Substantially increasing the amount of 10 cents per plant at present allowed per tree planted in areas in excess of those eligible for a full rehabilitation grant.*

Implementation as in 1953.

(iv) *Importing banana plants for sale to peasant growers :*

During 1954 the Board imported some 50,000 Cavendish banana suckers for free distribution to clonal cacao planters. Some 12,000 of these were allocated to the Department of Agriculture for the propagation of planting material in the Government Nurseries.

(42) *The Department of Agriculture to increase its area under local foodcrops, at the Central Experiment Station and the Demonstration Stations, by 70 acres for the provision of planting material for sale.*

Implementation as in 1953.

(43) *The Marketing Board to increase and expand its depots and activities as well as its propaganda in regard to :*

(i) *The sale of seeds, planting material, fertilisers, insecticides and cartridges;*

(ii) *The purchase of food in areas of high production and its resale in areas of low production.*

Implementation as in 1953.

(44) *The Marketing Board intensively to publicise its guaranteed minimum prices for locally-grown foods, revising the figures annually and keeping them as high as market conditions may permit, and to offer short-term maximum guarantees when conditions warrant.*

Action was again taken, as indicated, and the prices fixed during the year were as shown in Table II.

(45) *The Department of Agriculture to consider, in the light of results obtained from a drive now in progress in Tobago, the advisability of purchasing a stock of guns and organising drives against vermin and crop-destroying birds in specific areas and at specific times.*

Further implementation of this recommendation is still under review.

(46) *The Forestry Department to increase the area of Government teak plantations by 200 acres a year with a view to a permanent addition (2,000 acres in 10 years) to the country's capital assets and an increase in annual food production, the new lands to be split up between two to three zones.*

This recommendation is being implemented.

#### FISHERIES

(47) *Proposed legislation for organising, assisting and controlling the Fishing Industry to be enacted, but provision for loans to be excluded therefrom (loans, as distinct from grants, should be dealt with through the lending agency of the Agricultural Credit Bank).*

At present it has been found impracticable to cover all the various requirements of the fishing industry under a single comprehensive Ordinance. It has therefore been decided that a series of brief Ordinances should be enacted as and when the circumstances demand them.

(48) *Additional depots and refrigerated trucks to be equipped by the Marketing Board for its important function of distributing and marketing fish.*

The plans and estimates for establishing a cold storage plant for fish in Port-of-Spain are still being studied.

(49) *The appointment of a fully-qualified Fishery Officer, and his equipment with the means of studying the various aspects of the industry and improving the techniques of fishermen, to be accelerated.*

This recommendation has been implemented.

(50) *The organizations investigating the possibility of introducing modern techniques to the local fishing industry to be given every possible facility.*

Implementation as in 1953.

#### LOANS ADMINISTERED THROUGH THE AGRICULTURAL CREDIT BANK

(51) *The sum of \$2,115,000 to be provided for augmenting the lending activities of the Bank.*

This recommendation is being implemented.



4. During 1952, the Local Food Production Committee held two further meetings and submitted a second Interim Report which was published as Council Paper No. 16 of 1953. A summary of their recommendations and action so far taken is as follows:—

#### LEGISLATION

(1) *The Draft Ordinance to amend the Summary Offences Ordinance should be passed into law. Fines should range from a minimum of \$25 to a maximum of \$500 and imprisonment from a minimum of one month to a maximum of six months. The attention of Magistrates to be drawn to the need for awarding costs to witnesses, &c., commensurate with the time lost and expense involved.*

See (7) on page 4. The proposal outlined in the last sentence of this recommendation was not approved.

(2) *The Draft Ordinance to amend the Sale of Produce Ordinance should be passed into law. A shrinkage of 1 per cent. on copra should be allowed.*

This Ordinance awaits enactment. The proposal regarding copra shrinkage has not been accepted.

(3) *Remission of the tax on gasolene for fishing boats, along the lines approved by the Fisheries Committee, to be allowed.*

See (18) on page 6.

#### LAND UTILISATION AND SOIL CONSERVATION

(4) *No pains should be spared to secure a visit and advice from Dr. H. H. Bennett. Following his report, every effort should be made to implement his recommendations and to provide a service for advising and assisting farmers who wish to draw up land-use programmes and to undertake soil conservation measures.*

Since Dr. Bennett was unable to visit Trinidad and Tobago an attempt was made during 1954 to arrange for a visit by Dr. Buie, a member of the United States Soil Conservation Service who paid an advisory visit to Barbados. Dr. Buie unfortunately was unable to spare time for more than a short visit and the question of obtaining his services or those of another Expert for a longer period is still under review.

(5) *The Department of Agriculture to be provided with the funds required for testing out grasses and techniques on mountain slopes which might be too steep or the soil too poor to support permanent or arable crops, but which might be suitable for grazing areas. The possibility of mountain streams being used for irrigation to be tested.*

Shortage of staff has precluded any action being taken on this recommendation so far.

(6) *Early institution of a scheme for fire-watching and fire-control for rural areas to be started. The co-operation of the Light Aeroplane Club to be sought in this respect. The law obliging persons to help in controlling fires to be enforced.*

This recommendation is still under review.

(7) *The attention of the Department of Works and Hydraulics to be drawn to the need for greater care to be taken in leading water off roads and into private lands, and to be requested to see that its culverts are laid with due regard to the removal of drainage water from neighbouring land.*

Action was taken as indicated.

#### AGRICULTURAL ENGINEERING RESEARCH AND ADVICE

(8) *An Agricultural Engineer to be appointed to the Staff of the Department of Agriculture without delay, this post to take the place of that of an Agricultural Economist, if necessary.*

An Agricultural Engineer was appointed to the Department during 1954.

#### PRACTICAL COURSES IN FARMING TECHNIQUES

(9) *Agricultural Courses of short duration to be offered at one centre in Trinidad and one in Tobago. These courses to provide sound practical and some theoretical training to practising agriculturists and those desirous of following the rural way of life. Two hostels to be erected, one at St. Joseph Stock Farm and one at Louis d'Or, Tobago, accommodating 16 and 8 persons, respectively. A responsible officer, of the level of a Senior Agricultural Assistant, to be placed in charge of the courses. Students to supply their own towels and bed-linen and provide their own meals. An allowance of \$1.50 per day to be paid to those students whose circumstances may not permit them to pay their own way entirely.*

Shortage of staff precluded action being taken on this recommendation in 1954.

#### PROCESSING MILK IN TOBAGO

(10) *A small milk-processing plant to be installed and operated at the Tobago Farm for the manufacture of cream, butter, ghee, &c., from milk in excess of the fluid-milk requirements. Milk for processing to be purchased at 55 cents per gallon delivered at the Farm.*

No action was taken on this recommendation during 1954.

## AUDEO-VISUAL AIDS IN AGRICULTURAL EDUCATION

(11) *Measures should be taken to accelerate and expand the production of locally prepared films, film-strips, &c., for use in educating farmers in improved techniques.*

The establishment of an Adult Education Training Centre Workshop was not possible during 1954, but it is hoped that steps can be taken to implement this recommendation more fully in 1955. Two films were however made during 1954, one on Paralytic Rabies and the other on Banana Production.

## AGRICULTURE IN THE COLONY

### GENERAL CONDITIONS

5. The annual rainfall for a number of selected stations throughout the Colony and the monthly means for 1954, as well as for a 23-year average, are given in Tables III and IV. These data have been kindly supplied by the Hydrologist of the Works and Hydraulics Department.

6. There were again further increases in wages in all the agricultural industries by private enterprise as well as Government. Towards the end of the year the wages of all Government daily-paid workers were increased by 36 cents per day retrospective to the 1st January, 1953.

### AGRICULTURAL PRODUCTS FOR HOME CONSUMPTION

#### *Crops*

7. Weather conditions were not ideal for the production of corn, ground provisions and rice. The lack of a marked dry season severely limited corn production and the volume of ground provisions reaching the markets was, on the whole, not as great as in 1953.

8. As a result of the heavy mid-year rains not setting in until July the establishment of the rice crop was retarded and harvesting took place under extremely wet conditions in November and December. The crop obtained, however, was at least an average one.

9. Fair supplies of green vegetables and tomatoes reached the market though production during the first quarter was affected by unfavourable weather. The quality of tomatoes was poorer than usual. Supplies of pigeon peas and pulse-crops were fair and there was no shortage of bananas for local consumption.

10. There was, however, a general increase in the quantities of local food crops imported from the other B.W.I. territories in particular the quantities of sweet potatoes and plantains. The position is recorded in greater detail in a later section of this Report.

11. Exports of food crops from Tobago to Trinidad dropped appreciably and the marked increase in 1953 was not sustained. To attribute this to the prevailing high prices for export crops rather than to poor communications in the rural areas, which have certainly not deteriorated since 1951, or to less favourable weather, would appear more reasonable.

### *Livestock*

12. *Supply of Stock Feeds*—Although the corn crop was a poor one adequate supplies were imported from abroad. The increased use of rice husks, in that form, by stock owners led to a reduction in the quantity purchased by the Marketing Board and therefore in the amount of rice bran and broken rice incorporated in prepared rations. Adequate supplies of cotton seed meal, coconut meal and molasses were available. About 800 tons of dehydrated Citrus Pulp Meal were made at the new plant operated by the Co-operative Citrus Growers' Association.

13. *Meat and Milk Production*—Figures from Municipal and Government-controlled slaughter houses, which do not represent complete data for all livestock slaughtered in the Colony show that 1,165 tons of beef and veal; 573 tons of pork and 10 tons of mutton were produced from animals slaughtered. Similarly, complete production figures for fresh milk are not obtainable, but returns from the larger producers show that they handled 28,380 gallons per month.

14. *Importations*—The animal imports are listed in Table V.

15. The imported fresh meat supply of the Colony came chiefly from New Zealand and Australia in the form of frozen meat and is summarised in Table VI.

### *Apiculture*

16. There were 226 registered apiaries at the close of the year. Honey production for the year was poor. 27,499 lb. of honey were exported.

## AGRICULTURAL EXPORTS IN 1954

17. Preliminary figures indicated that the value of agricultural exports, raw and manufactured, increased by some \$5,905,354 (12 per cent.) on the 1953 figure (\$47,335,468) to a total of \$53,240,822.

18. The quantity and value of the various agricultural exports are shown in Tables VII and VIII, the data for which were kindly supplied by the Government Statistician. The figures quoted are preliminary ones and subject to final review.



*Sugar*

19. Sugar production in 1954 totalled the record figure of 172,767 tons. This was the highest production achieved to date being 20,149 tons more than the 1953 production of 152,618 tons and 13,632 tons more than the previous peak output in 1949. This was due chiefly to a good cane yield and improved juice quality which, with good weather, combined to make the final total production about 7,000 tons more than the estimate at the beginning of the year.

20. The final crop figures, compared with the previous year, are set out in Table IX.

21. It will be noted that farmers' deliveries during the year again represented an increase of almost 100,000 tons over the previous year. The 1954 tonnage represents the largest quantity of farmers' canes ground since 1938. A very gratifying feature of the year's operations was the fact that no canes were left unreaped at the end of the season.

22. Twenty-three thousand tons of sugar were retained for local consumption which included sugar used in the manufacture of produce for export.

23. Due to the increased rate of grinding, the rate of shipment of 1954 export sugar was not entirely satisfactory during the early months of the year. Once again it was fortunate that Port Services were able to increase the storage space earmarked for sugar, from 7,000 tons to approximately 16,000 tons, for a few weeks during the middle of the grinding season thus affording relief in what might otherwise have developed into a serious storage situation. The last regular consignment of export sugar was lifted during the month of September.

24. The total quantity of sugar exported in 1954 amounted to 149,812 tons of which 10,000 tons were shipped to Canada, 10 tons to Grenada and the remainder to the United Kingdom. 127,646 tons of this total were shipped as Negotiated Price Sugar (i.e., 124,578 tons which is Trinidad's basic allocation, plus 3,068 tons which accrued to this Colony as a result of the inability of other B.W.I. Colonies to take up all of their Negotiated Price Quotas). Shipment in bulk amounted to 69,588 tons and the following tabulation of shipments in this manner since its inception in 1950 shows the development of this method of shipping:—

|      |     |     |     |     |             |
|------|-----|-----|-----|-----|-------------|
| 1950 | ... | ... | ... | ... | 16,000 tons |
| 1951 | ... | ... | ... | ... | 43,110 „    |
| 1952 | ... | ... | ... | ... | 53,850 „    |
| 1953 | ... | ... | ... | ... | 61,278 „    |
| 1954 | ... | ... | ... | ... | 69,588 „    |

25. Pest control measures have, during the year, been reasonably effective, and the annual froghopper attack, although severe in places, was held in check.

26. Negotiations concerning the 1955 price of "Negotiated Price Sugar" under the Commonwealth Sugar Agreement were conducted with the British Government by the British West Indies Sugar Association in conjunction with other Commonwealth Exporters during the latter part of the year. By application of the approved formula the price was fixed at £40. 15s. 0d. per ton which represented a reduction of 5s. per ton on the previous year's price. This reduction was due to a decrease in the index of cost for certain supplies. It must be emphasised that this price relates to 124,578 tons of Trinidad's export sugar only which, as stated above, is our Negotiated Price Quota under the Commonwealth Sugar Agreement. The price which can be obtained for sugar outside this quota, known as "free" sugar, fluctuates according to the demand of the free market and is currently in the region of £10 per ton lower than the Negotiated Price. Thus, in 1954 the tonnage of "free" sugar amounted to 22,166 tons resulting in a lower average price per ton on all sugars exported.

27. Consequent on the above, the Sugar Industry (Price Stabilisation Fund) Regulations were issued to provide for withdrawals from the Fund for the year 1954 and each year thereafter, when applicable, towards the difference between the Negotiated Price and the average price received from sales of "free" sugar. The relevant portion of these regulations is as follows:—

"In respect of the year 1954 and of each year thereafter if in any year the net f.o.b. value of a ton of sugar sold by any manufacturer at the negotiated price under the Commonwealth Sugar Agreement is greater than the net f.o.b. value of a ton of exportable sugar sold otherwise by the said manufacturer, the amount by which the former is greater than the latter shall be paid to such manufacturer from the Sugar Industry Price Stabilisation Fund in respect of each and every ton of such exportable sugar exceeding the negotiated price quota allocated to the said manufacturer for that year; Provided that the sum per ton of sugar to be paid in respect of any year shall be limited to the amount calculated according to the following formula:—

$$\frac{(\text{Maximum export quota tonnage}) \times (\text{Sugar Industry Price Stabilisation Fund Levy})}{(\text{Maximum export quota tonnage}) - (\text{Basic negotiated price quota})."}$$

28. The Sugar Industry Labour Welfare Committee, which is charged with the administration of the levy of \$2.40 per ton on sugar exported from this Colony and paid into the Sugar Industry Labour Welfare Fund, continued to make advances to sugar workers and cane farmers for the improvement of housing conditions. As more money was required for the maintenance of this programme, Legislation was enacted to enable 50 per cent. of the sum standing to the credit of the Sugar Industry Price Stabilisation Fund at the end of

1953 to be diverted to the Labour Welfare Fund. The Labour Welfare Fund therefore benefited to the extent of approximately \$2,500,000. Up to the end of the year loans totalling \$1,688,752 had been made to 1,945 workers and cane farmers in the industry.

29. The Sugar Industry Special Funds (Amendment) Ordinance, 1954 which gave effect to this transfer, at the same time diverted the remaining \$2,500,000 to the Sugar Industry Rehabilitation Fund since it was considered that greater assistance should be afforded for purposes of rehabilitation than was at the time possible.

### *Cacao*

30. The heavy rains at the end of 1953 resulted in severe Black Pod infection which affected production during 1954. The quantity exported amounted to 17,640,784 lb. (\$15,047,820) compared with 21,608,496 lb. (\$11,720,925) in 1953. The decrease in quantity, however, was more than offset by the high prices which prevailed. Exports and value of raw cacao for the last five years are shown in Table X.

31. Yields from clonal cacao are accounting for an ever increasing proportion of the Colony's output and the rehabilitation of the industry proceeds apace. There is an appreciable increase in the demand for clonal plants and the steps being taken by the Cacao Board to meet this are dealt with in a later section of this Report.

32. The future outlook for the industry is encouraging with every indication of attractive prices being sustained. The prospects for next year's crop were the most promising for the past 10 years; again however, late rains have caused considerable losses from Black Pod disease which have been estimated at some 6,000,000 lb.

### *Citrus*

33. The 1953-54 crop of grapefruit and oranges was considerably smaller than that of 1952-53 and harvesting extended over a shorter period of time. By early April packing of fruit by the Co-operative Citrus Growers' Association was brought to an end and operation of the canning and stockfeed plants ceased on 15th May. There were small quantities of off-season fruit available on the local market for the greater part of the year.

34. The production of limes in 1954 was estimated to be little over half of that in 1953. The largest factory in Trinidad handled 511,714 lb. of fresh limes (about 75 per cent. of limes processed in the Island) and produced 1,537 lb. lime oil and about 11,200 gallons lime juice.

35. The total value of all citrus products exported was \$2,051,591 a decrease of \$1,398,725 on the total for 1953.

36. The Co-operative Citrus Growers' Association produced 370,678 cartons of juice and exported 83,783 cases of fresh fruit. During the year 310,557 cartons of juice were exported and 88,910 sold locally.

37. Flowering of trees for the 1954-55 crop was delayed as a result of the protracted dry season. There was a false blossom in some areas at the beginning of April, but much of this failed to set and it was not until late May and June that regular flowering occurred in most districts. There was heavy "June drop" of fruit in August but the prospects are that the 1954-55 crop will be larger than that of 1953-54. Harvesting commenced in December and at the end of the year 34,539 boxes of grapefruit and 13,853 boxes of orange had been delivered to the packing house. Fruit sizes have continued the downward trend and a superficial scarring of the rind has been responsible for extensive culling in grapefruit.

38. Further planting, particularly of oranges continued, most of the Nursery Stock being obtained from the St. Augustine Station. The following plants were distributed during the year:—

|              |     |     |                                  |
|--------------|-----|-----|----------------------------------|
| Grapefruit   | ... | ... | 24,069 (approximately 340 acres) |
| Oranges      | ... | ... | 70,786 (approximately 700 acres) |
| Limes        | ... | ... | 14,049 (approximately 140 acres) |
| Other Citrus | ... | ... | 820                              |

39. The citrus acreage in the Colony is now estimated to be as follows:—

| Fruit           |     |     |     | Bearing Trees | Non-Bearing Trees | Total  |
|-----------------|-----|-----|-----|---------------|-------------------|--------|
| Grapefruit      | ... | ... | ... | 8,000         | 1,000             | 9,000  |
| Orange          | ... | ... | ... | 5,000         | 2,000             | 7,000  |
| Lime            | ... | ... | ... | 500           | 100               | 600    |
| Other Varieties | ... | ... | ... | 50            | —                 | 50     |
| TOTAL           | ... | ... | ... | 13,550        | 3,100             | 16,650 |

### *Coconuts*

40. The total value of all exports of coconuts and their derivatives amounted to \$1,204,815, a decrease of \$124,301 on the figure for 1953. Exports of unrefined coconut oil were negligible, the quantity produced being absorbed on the local market.

### *Coffee*

41. Exceptionally high prices prevailed for most of the year and the quantity and value of raw coffee exported increased by 714 tons and \$2,034,771 on the 1953 production to total figures of 1,779 tons and \$3,835,294.



### *Bananas*

42. Eighty-one thousand three hundred and eleven bunches of Gros Michel bananas were exported to the United States of America. This represented a considerable increase on the quantity exported in 1953.

43. A total of 2,472 tons (\$272,672) of bananas were exported compared with 1,164 tons (\$120,864) in 1953. Exports included three trial shipments which were made to the United Kingdom towards the end of the year, following the signing of a 15-year Contract with the Union International Company Ltd. for the supply of Cavendish bananas. Reports on these trial shipments were very encouraging.

### *Tonca Beans*

44. Exports of tonca beans (23,477 lb.—\$37,054) dropped back to about the 1951-1952 levels as compared with the appreciable increase in 1953 (414,982 lb.—\$542,116).

### *Rubber*

45. No rubber was exported during 1954.

## WORK OF THE DEPARTMENT OF AGRICULTURE

46. The work of the Department was again affected by shortage of staff. For the greater part of the year there were vacancies for a Senior Agricultural Officer, an Agricultural Officer, three Senior Agricultural Assistants and four Agricultural Assistants. A Senior Agricultural Officer, an Agricultural Officer and two Senior Agricultural Assistants were, however, appointed during the latter part of the year.

47. One Agricultural Officer was away from the Colony during November and December studying the Banana industries in the other West Indian Islands and, as a result of this and the absence of other officers on vacation or study leave, the year ended with all Divisions, with the exception of Land Settlement, understaffed. To maintain any reasonable continuity, particularly in the Extension Division where this is so important has therefore been impossible.

48. A high proportion of the junior staff in the field have had very limited service and experience and the position will remain unaltered until 1956 when the second intake (18) of the older Field Assistants have completed their one year's course at the Eastern Caribbean Farm Institute.

49. This section of the Report summarises the activities and achievements of the Department of Agriculture. Fuller details, in unpublished reports of individual officers, are available and enquiries regarding any particular aspect of the work will be welcome.

## EXTENSION

50. The following services were undertaken by the Department's Extension Division during the year:—

- (a) General advice to the public on agriculture;
- (b) Inspection visits to school gardens for advice and judging in connection with the Annual Competition;
- (c) Supervision of over 10,000 acres of food gardens;
- (d) Inspection and allocation of Crown Lands and the preparation of detailed programmes of work for applicants under three year Probationary Agreements leading to a 25-year lease;
- (e) Assistance and support to agricultural organisations, agricultural exhibitions and Field and Livestock Competitions;
- (f) Supervision of the District breeding units;
- (g) Supervision and management of district demonstration stations;
- (h) Parasol ants destruction on Crown Lands;
- (i) Crops Surveys, Capital Formation Surveys, Distribution of Pure Line Padi;
- (j) Implementing Agricultural Legislation for Plant Protection purposes.

51. District demonstration stations are maintained at Sangre Grande, Rio Claro and Penal, and at Louis d'Or in Tobago. The objects of these stations are:—

- (a) to ascertain a suitable system of mixed farming for application to peasant agriculture;
- (b) to demonstrate methods of crop production and livestock management which the peasant can copy;
- (c) to be a centre for the distribution of seed, planting material and stock;
- (d) to be the local headquarters of the Agricultural Department.

52. Disposal of livestock and crops, mainly from Demonstration Stations in the District Services Division at El Reposo (Sangre Grande), Rio Claro, Penal and Louis d'Or, Tobago, for breeding or planting purposes and for consumption, is shown in Table XI.

53. Revenue derived from the major and minor District Stations as well as that from the Breeding Units under the control of the Extension Service is shown in Table XII.

54. Examination of the revenue figures shows that cacao, among the permanent crops, is the highest revenue producer, followed by poultry (including eggs), milk, fruit, vegetables, ground provisions and copra, the last being manufactured at only one Station. In the livestock section, sales

of stock represent a considerable contribution to the revenue. It is reasonable to expect that with the yearly improvements taking place on these stations and with an assurance of good prices, there should be an improved trend in the revenue: Total Revenue from all sources was \$41,821.05 as compared with \$31,574.58 in 1953.

55. The supervision of 23 District Breeding Units forms an important part of livestock extension work and the number of services listed below is an indication of the usefulness of the Service. There was a large unsatisfied demand for weaner pigs and, on nearly all units, pig breeding was carried out to cater to the needs of the peasantry. In addition, poultry, buck goats, ram sheep and buck rabbits were maintained for issue of improved livestock material, such as eggs for setting, cockerels for exchange and male stock for stud purposes.

56. The real cost per service to Government is approximately \$12.00, but the average cost per service to the farming public is only 75 cents. Thus revenue from Breeding Units average only seven per cent. of expenditure and from their very nature and functions represent a subsidy to livestock owners. Total revenue from all Units was \$2,811.31.

57. Statistics of these services were as follows:—

|       |     |     |     | 1953  | 1954  |
|-------|-----|-----|-----|-------|-------|
| Bulls | ... | ... | ... | 1,859 | 1,834 |
| Boars | ... | ... | ... | 490   | 740   |
| Bucks | ... | ... | ... | 1,151 | 1,221 |
| Jacks | ... | ... | ... | 168   | 147   |
| Rams  | ... | ... | ... | 57    | 93    |

58. Work on the establishment of a banana industry based on the Cavendish varieties, occupied the major attention of the District Staff during the year. A crop survey revealed the existence of more than  $1\frac{1}{4}$  million stools on the ground of exportable varieties, and indicated the main defects which will have to be remedied if a successful industry is to be established and integrated with the existing system of agriculture.

59. Banana nurseries and plants were established on the various stations and it is hoped to have some eight to ten thousand suckers available for distribution from these in 1955.

60. A Pilot Fertilizer Scheme for Bananas in which issue of free fertilizers to selected farmers is made after they have met the needs of good cultivation was in operation late in the year, and it is hoped that the results will encourage the wider use of fertilizers in the industry. This scheme coupled with that of the Fertilizer Scheme of the Cacao Board for use on clonal cacao is expected to raise the standard of cultivation among farmers in the Colony.

61. During the year, there were 7 Cane Farmers' Shows organised by the Sugar Estates in co-operation with the Department and the Parent Agricultural Society; Field Competitions were held in all counties with one exception, and a highly successful Banana Field Day was organised by the Extension Service in collaboration with the Research Staff and the Parent Society at Research Headquarters at Centeno. The Tobago Agricultural Society held its Seventh Annual Agricultural Exhibition in collaboration with the Department of Agriculture.

#### CENTRAL EXPERIMENT STATION

62. *General.*—The progress made so far in the development of the research facilities of the Department warrants a brief review of the objectives of the Central Experiment Station. These have been outlined in the report of the Agricultural Policy Committee which stressed the importance of investigational work by planned experiments as the basis of accurate knowledge for dissemination throughout the Colony. The establishment of a properly equipped central experiment station with resident specialist officers and supporting staff has therefore been urgently needed.

63. Funds for most of the capital works were made available from a Colonial Development and Welfare grant. These provided for the construction of laboratories and offices, senior and junior staff houses, tractor sheds, workshops and stores. Field and laboratory equipment has been provided from local funds and during the past year, the laboratories and senior staff houses were fully occupied for the first time.

64. The staff position improved considerably. The appointment of an Entomologist, a Plant Pathologist and an Agricultural Engineer during the year brought the Senior Technical Staff up to full strength for the first time. The ranks of the junior staff, however, remained incomplete and this situation will continue until more Field Assistants have completed their training courses at the Eastern Caribbean Farm Institute.

65. Field experimentation continued and the expansion of the area under cultivation was marked. New lands were devoted to pasture establishment and management investigations, production of fodder crops, tropical fruits and experimental banana fields. In the Cacao Section a substantial area has been laid out in experiments while propagator installations and nurseries have also been expanded.

66. The following is a brief descriptive list of the main lines of research and details of experimental work carried out are provided in later sections of this report.

- (a) *Sugar Cane*—Testing of new hybrid varieties and bulking for distribution to the sugar plantations; cultivation and fertilizer trials.
- (b) *Cacao*—Testing of clones; shade, spacing and fertilizer trials; cultivation experiments; selection and hybridization for resistance to disease.



- (c) *Citrus*—Rootstock and management studies; cultivation and fertilizer trials; disease problems.
- (d) *Coconuts*—Selection of seed for propagation; pest and disease problems.
- (e) *Bananas*—Cultivation and fertilizer trials; pest and disease control.
- (f) *Fodder*—Introduction and extension of fodder grasses and legumes. Pasture establishment, grazing trials and feed management.
- (g) *Rice*—Selection for yield and field habits; pure line seed production for distribution.
- (h) *Miscellaneous*—Introduction of oilseeds, fibres, food crops, &c., for trial under local conditions and for providing selected seed for planting.
- (i) *Soil Conservation*—Run-off trials and the collection of data.
- (j) *Soil Survey*—Mapping of the soils of South Trinidad; laboratory analyses of samples.

67. In addition to the above, field experiments are also conducted off the station where particular soil or climatic patterns make such a course necessary.

68. *Revenue*—Details of revenue are shown in Table XIII.

#### ST. AUGUSTINE STATION

69. *Weather*—The dry season was tempered with intermittent showers especially in the months of March and April. The rainy season began about a month late and as a result field operations were retarded. The season was one of heavy showers interspersed with dry spells. Flooding of fields was consequently more frequent than in previous years.

70. Rainfall figures at this station for 1954 were as follows:—

| <i>Jan.</i> | <i>Feb.</i> | <i>Mar.</i> | <i>April</i> | <i>May</i>  | <i>June</i> | <i>July</i> | <i>Aug.</i> | <i>Sept.</i> | <i>Oct.</i> | <i>Nov.</i> | <i>Dec.</i> |
|-------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|
| <i>ins.</i> | <i>ins.</i> | <i>ins.</i> | <i>ins.</i>  | <i>ins.</i> | <i>ins.</i> | <i>ins.</i> | <i>ins.</i> | <i>ins.</i>  | <i>ins.</i> | <i>ins.</i> | <i>ins.</i> |
| 1.80        | 1.10        | 2.08        | 2.90         | 1.09        | 8.03        | 11.11       | 14.85       | 3.85         | 8.31        | 6.37        | 5.16        |

71. *Revenue*—Details of revenue are shown in Table XIII.

72. *Citrus*—Due to the late start of the rains lifting of citrus began in July instead of the customary May or June, and ended about the middle of November. During this period 110,345 plants were distributed. This represents an increase of 11,350 and 14,300 over the years of 1953 and 1952 respectively. For the first time in the history of the station over 100,000 plants were distributed.

73. About 10,000 plants were held over this year. Most of these are plants which were budded late and had not made sufficient growth for distribution.

74. Approximately 225,000 seedlings of Sour Orange and Rough Lemon were planted out for budding. This represents an increase of about 35,000 over the previous year's planting. During 1954 50 lb. seed of Dominica Wild Grapefruit were imported but germination was extremely poor.

75. Plant orders for 1955 have not yet been accurately determined but they are in excess of all previous years and have been estimated at 350,000. The majority are for Valencia oranges.

76. *Avocado Pear*—During the year 9,172 plants were distributed of which 325 were on free issue.

77. Orders received for 1955 amount to 16,000. About 19,000 plants will be budded.

78. *Mangoes*—4,412 plants were distributed. Orders were received for some 16,000. Approximately 30,400 root stocks were potted and it is expected that in 1955 over 10,000 grafted plants should be produced.

79. *Vegetables and Ornamentals*—The demand for vegetable seedlings has not yet increased beyond the level of 1952, the year of the intensive Grow More Food Campaign. The heavy showers and unusual weather discouraged extensive planting. A record number of boxes of ornamental seedlings have been produced and for the most part demands were satisfied.

*Total Distribution of Vegetable and Ornamental Seedlings for 1951-1954*

|                              |     | 1951   | 1952   | 1953   | 1954   |
|------------------------------|-----|--------|--------|--------|--------|
| Vegetable seedlings (boxes)  | ... | 8,434  | 9,450  | 7,971  | 7,617  |
| Ornamental seedlings (boxes) | ... | 4,463  | 5,276  | 5,998  | 6,868  |
|                              |     | <hr/>  | <hr/>  | <hr/>  | <hr/>  |
| TOTAL                        | ... | 12,897 | 14,726 | 13,969 | 14,485 |
|                              |     | <hr/>  | <hr/>  | <hr/>  | <hr/>  |

80. The number of potted flowering trees, shrubs and hedge plants distributed amounted to 57,660 of which 9,830 were on Free Issue. Figures for the previous year were 47,617 and 9,933 respectively.

81. *Orchard Crops*—Trees in the Citrus orchard were each given two dressings of 4 lb. each of sulphate of ammonia during the year. In addition approximately one-half of the mature trees were sprayed with zinc and manganese with the object of correcting minor element deficiencies.

82. Four thousand five hundred and eighty-four crates of grapefruit and 96 of oranges were delivered to the Co-operative Citrus Growers' Association.

83. Local sales and free issue amounted to 190,000 and 127,000 individual fruits of grapefruit and oranges respectively.

84. *Field Crops*—The following crops are grown mainly to supply planting material of high quality:—

- (a) *Corn*—Approximately 15,500 lb. were sold, much of which was selected seed sold to the Marketing Division.
- (b) *Pigeon Peas*—About 400 lb. of seed were sold. Adverse weather conditions led to a poor germination and yields were accordingly low.
- (c) *Yam*—The yield of yams was approximately 37,000 lb. most of which was sold to the Marketing Division.
- (d) Market garden crops grown included tomatoes, cabbage, lettuce, cauliflower, &c. These are grown mainly to utilise surplus seedlings instead of discarding them when overgrown.

85. *General*—Miscellaneous crops including Sun Hemp, Cowpea, Woolly Pyrol, Kudzu, Tephrosia are grown. Approximately 4,000 banana suckers were received and planted out during the year in order to increase the supply of plants available during the coming year.

## CROPS

### CACAO

#### *Clonal and Fertilizer Trials*

86. Field experiments, comprising both clonal and fertilizer trials, remained at 13 in Trinidad and 6 in Tobago. No new sites were selected in 1954. Routine maintenance work continued satisfactorily on the existing experiments, and the programme is up to schedule.

#### *Breeding and Selection of Witchbroom Resistant Clones*

87. Yield recording and breeding work continued at the Marper Station during the year. The progeny resulting from the present breeding programme has been planted at La Chaguaramas and arrangements are now underway to extend this plot to its eventual area of approximately 15 acres. In addition to the crosses being made last year, of which 1,215 were planted during 1954, the following 5 I.C.S. parents and 10 Amazon clones are being included in the revised breeding programme:—

I.C.S. 1, 6, 39, 44, 95.

S.C.A. 6, 12, SP. 1, P.A. 30, 34, 39, 195, I.M.C. 67, 94, S.J. 231.

88. In accordance with the policy of duplicating certain experiments laid down at River Estate (Cacao Research—I.C.T.A.), another two experiments were laid down during the year at the Central Experiment Station. The first

is a mulch trial covering 5 acres, the purpose being to test the effect of various mulches on clonal cocoa. This is a slightly modified replication of the River Estate mulch experiment. Briefly, this will compare the merits of the following mulches:—

- (1) Control.
- (2) Sawdust mulch.
- (3) Cut bush mulch.
- (4) Sawdust mulch fortified to a reasonable level with inorganic fertilizer.
- (5) Cut bush mulch fortified to a reasonable level with inorganic fertilizer.
- (6) Inorganic fertilizer equivalent to (4) and (5).
- (7) Heavy application of cut bush mulch to provide a continuous cover.
- (8) Inorganic fertilizer equivalent to (7).

There are 8 treatments arranged in randomized blocks.

Clones in use are:—

*Experimental Plots :*

I.C.S. 1, 6, 8, 22, 32, 35, 39, 40, 43, 44, 46, 47, 53, 60, 61, 64,  
79, 81, 84, 89, 90, 91, 95, 98, 100,

I.M.C. 67, P.A. 121, 218, 169, P. 7 (30 clones).

*Guard rows :*

I.C.S. 1, 89, 95, S.C.A. 6, 12 (5 clones).

89. The second experiment covers one acre and is being conducted to test the effect of soil conditioners on clonal cocoa, with special reference to root development. The soil conditioner in use is Krillium. Treatments consist of Krillium at two levels (and control) using I.C.S. 1 and I.C.S. 95 clones. The trees will be dug up at intervals for examination and measurement of root systems.

90. Progress in the shade, spacing and fertilizer trial, described in the 1953 report, has been satisfactory; considerable development was made during the wet season, and supplying, fertilizing and all cultural operations are up to date.

*Diseases*

91. There was a marked increase during the latter part of the year in the incidence of Black Pod disease. This was the result of the heavy rains which occurred in November-December. There was a corresponding increase in the extent of Cherelle Wilt. It is estimated that as a result of Black Pod, Cherelle Wilt and Witches' Broom cacao production will be reduced by some five to six million pounds.



92. The Virus disease campaign has been carried on in two phases:

(1) Routine inspection of Propagating Stations.

The following stations were inspected during the year:—

La Pastora, La Reunion, Marper, Non Pareil Estate Propagator.

No virus infected trees were found at any of these stations.

(2) Continuation of the attempt to eliminate the virus from the Sangre Grande district.

The policy of cutting contracts was agreed upon by the Cocoa Board and this commenced in the latter part of 1954. It is to be hoped that the cutting out of contracts will result in elimination of infection since it is apparent that the cutting of infected trees only had failed to stop the spread of the disease.

### CACAO SUBSIDY SCHEME (ADMINISTERED BY THE COCOA BOARD)

#### *Principles*

93. No variations to the principles of operation of the Scheme were made in 1954.

#### *Housing*

94. The Board considered proposals that it participate in a Housing Scheme for cocoa workers, similar to that in operation for sugar workers. Whilst the Board considered that there was a real and urgent need for the provision of assistance in the development of housing in order that the Rehabilitation of the industry may proceed at the rate already planned, it was only able to make the offer of limited financial assistance. At the close of the year no final decision had been reached.

#### *Rehabilitation*

95. Three thousand five hundred and eighty-six applications for rehabilitation of cacao have been registered, of which 3,305 have been approved to the end of 1954. Of these numbers, 1,016 were received during 1954, and 944 approved.

96. The total approved applications for the years 1952-1954 were divided among estates as shown in Table XIV.

97. Applications from planters for delivery of clonal plants in 1955 amounted to 1,540,203 for Trinidad and 175,694 for Tobago, as compared with 1,159,280 and 106,553 respectively, in 1954.

98. An allocation of 713,096 plants has been made for delivery in 1955, as compared with 550,702 in 1954.

99. Of the plants distributed during 1954, 484,094 were delivered to planters and 33,671 utilised for nurseries and experimental work (400,709 and 59,529 in 1953).

100. This distribution to planters represents the Rehabilitation of approximately 2,457 acres of cocoa of which 605 acres were planted by complete replanting, and 1,852 acres by partial replanting.

101. Figures showing this distribution (to planters) by varieties are given in Table XV.

102. The sum of \$133,875.69 was paid out in subsidy for Cocoa Replanting during the year.

#### *Replacement*

103. In 1954, 621 applications to replace cacao with other crops were received, and 555 were approved. The total applications received and approved were 3,092 and 2,598 respectively.

104. The total approved applications for the years 1952-1954 were divided among estates as shown in Table XVI.

105. During the year, assistance was approved to plant 50.98 acres of citrus, 631.35 acres of coffee, 10.08 acres of other crops, and \$2,619.99 was approved for livestock, fodder and pens.

106. The sum of \$54,617.43 was paid in subsidy for Cocoa Replacement during the year.

#### *Propagation*

107. The average production efficiency of the Board's stations was maintained at 50 per cent. during 1954, Estate Propagators having an efficiency of 57.32 per cent. as compared with 48.57 per cent. on the Board's Central stations.

108. Open Bin propagation was continued in the wet season. During this period the efficiency was as high as with closed bin propagators. In the last quarter of the year a totally enclosed glass house was constructed with a continuous centrifugal humidifier. This unit was used for hardening-off plants rooted in open bins and resulted in an efficiency of approximately 10 per cent. higher than when conventional closed bin hardeners were used. The period of hardening-off was reduced to from five to seven days as against 10 to 14 days with closed bin hardeners.

109. Trials at La Pastora (started in 1953) on the rooting of cuttings, in situ, in baskets, were continued; three main methods were employed:

(a) Utilising plain potting soil.

(b) Utilising potting soil, with a central core of coconut bass residue. This core is two inches in diameter and extends to the bottom of the basket.

(c) As at (b) (above) but the core only extended to half the depth of the basket.

110. It was soon apparent that the use of soil alone was not reliable; no differences were apparent between (b) and (c); and the half core has been adopted for general use.

111. Twelve thousand plants were produced by this method, at an efficiency of 75 per cent. (station average 48.6 per cent.), for distribution in 1954. A further 9,000 had been produced by the end of the year, with an efficiency to date of 80 per cent.

112. The initial success of this method has led to changes in the type of bin utilised. At La Pastora closed bins have been modified by removal of the centre walls so that each individual box has an area of 18' x 7'. The drainage and rooting media have been removed, the baskets being supported on a wire shelf some eight inches above the bottom. At La Reunion six units have been constructed embodying these changes and resulting in appreciable savings in construction costs.

113. Further supplies of war surplus camouflage netting (utilised as overhead shade in the storage sheds) were not available during the year. The use of preserved bamboo slats (which is the cheapest substitute available) spaced to give a shade of 50 per cent., was begun during the year. Approximately one-third of the La Pastora station, and several estate propagators now have bamboo slat shade. Some difficulty was experienced (during a very wet period in the latter part of the year), with soil being washed out of the baskets through the heavy run-off from the slats which is more concentrated in individual points than with camouflage netting. This was partially overcome by mulching the plants in sheds.

114. The pre-treatment of potting baskets with a preservative, was tried during the year. A locally produced asphaltic compound is under trial, and arrangements have been made to utilise carbolineum which is utilised with appreciable success in cocoa propagation in Surinam.

#### *Propagating Stations*

115. *La Pastora*—Production for the year was 395,845 plants (378,507 in 1953). The over-all production efficiency was 48.56 per cent. (47 per cent. in 1953).

116. Extensive repairs and modifications were undertaken during the year; concrete floors have been laid down on some 18 units and more access provided to minimise the man-handling of plants. The sum of \$37,811.09 was spent on this construction work. The capital valuation of the station at 31st December, 1954 was \$430,253.29.

117. Some 12,063 plants were planted in nurseries during the year (13,891 in 1953). Of these, 6,793 were planted in new areas (Ribeiro section), the remainder being planted in old nurseries.

118. *La Reunion*—Construction began in late January, 1954, and propagation was started in July. At the end of the year five units were in operation and 51,626 plants had been produced at a production efficiency of 57.83.

119. Actual construction work was ahead of schedule since a start was made on the second half of the station originally planned for construction during 1955. The position at the end of the year was as follows:—

(a) *Propagating Units*

Units 1-9 complete (except for glass houses on units 1, 2 and 3).

Units 10-18, road approaches and drains complete, concrete slabs 40 per cent. complete on units 10 and 12.

(b) *Water Supply*

Pumps, main delivery line and storage tank complete.

Water supplied to completed units.

(c) *Station Buildings*

Offices, Storerooms, Garages and Workshops, Soil and Manure Sheds, complete.

(d) *Housing*

Four houses complete.

120. The sum of \$543,412.18 was spent on the construction of this station during 1954.

Some 11,000 plants were planted in new areas during the year (14,602 in 1953).

121. *Marper*—Production for 1954 was 48,332 plants (47,874 during 1953). This was achieved with a production efficiency of 46.44 per cent. (49.6 per cent. in 1953).

122. Some 424 plants were planted in nurseries in 1954 (1,969 in 1953).

123. *King's Bay*—Production for 1954 was 32,886 plants (20,267 during 1953). Production efficiency was 43.35 per cent. (25 per cent. in 1953). This rise in efficiency was due to the availability of better quality cutting material.

124. As the lease on lands at King's Bay has expired, the Board agreed to hand over the nursery area in 1956, the Propagating Buildings by 1959 and to construct a new station at Louis d'Or. This Station will be larger to allow for the increase in demand for plants in Tobago. Construction is planned to begin in 1955.

125. Some 1,120 plants were planted in new areas at the Louis d'Or Station (2,478 planted in 1953).

*Estate Propagators*

126. Five new estate propagators were constructed in 1954, as compared with two in 1953. These were Palmiste, Gilgre, Richmond and El Palmito, each of 10,000 plant per annum capacity, and Ste. Marie, 15,000 plant per annum capacity.



127. In addition, the propagator at Non Pareil Estate was extended to a capacity of 60,000 plants per annum (30,000 previously).

128. These new propagators (with the exception of El Palmito, which will begin propagation early in 1955) were in operation by the end of the year.

129. Estate Propagators (assisted type) produced 115,016 plants in 1954 (80,531 in 1953). Production efficiency was 57.32 per cent. (48.57 per cent. on the central stations), with a range on individual propagators from 36.49 per cent. to 92.93 per cent.

130. Some 2,624 plants were planted in nurseries on estate propagators during 1954 (3,419 in 1953).

131. There were thirteen estate propagators in operation at the end of the year.

*Cost of Plant Production*

132. The following figures show the average cost of production of one plant:—

| <i>Average Cost of Producing one Plant</i> |     |     |     | 1952 | 1953 | 1954 |
|--------------------------------------------|-----|-----|-----|------|------|------|
|                                            |     |     |     | \$   | \$   | \$   |
| La Pastora                                 | ... | ... | ... | .76  | .71  | .72  |
| Marper                                     | ... | ... | ... | .69  | .68  | .79  |
| La Reunion                                 | ... | ... | ... | —    | —    | .61  |
| El Salvador                                | ... | ... | ... | .75  | .52  | .70  |
| San Juan                                   | ... | ... | ... | —    | .49  | .72  |
| San Jose                                   | ... | ... | ... | —    | .72  | 1.14 |

*Manuring Subsidy*

133. The Board since 1952 has granted a Manuring Subsidy in the form of free issue of fertilizer to planters of clonal cacao.

The issues for the three years 1952-1954 are as follows:—

|      |     |     |     | <i>No. of planters supplied</i> | <i>Total Issued</i> |
|------|-----|-----|-----|---------------------------------|---------------------|
|      |     |     |     |                                 | <i>Tons</i>         |
| 1952 | ... | ... | ... | 123                             | 292                 |
| 1953 | ... | ... | ... | 343                             | 511                 |
| 1954 | ... | ... | ... | 525                             | 748                 |

SUGAR CANE

134. At the Central Experiment Station approximately 52.5 acres of cane were reaped which yielded 1,737 tons or 33 tons per acre.

135. Eleven and one-half acres were planted which included two lattice sorting trials of the B.49' and B.50' series as well as a large number of the newer varieties which are still under multiplication.

136. Twenty-five varieties of the B.52' series were received from the B.W.I. Central Sugar Cane Breeding Station and in addition the following twenty-nine varieties were obtained through the Plant Quarantine Station :—

|             |             |            |
|-------------|-------------|------------|
| H 32-8560   | Ajax        | Co270      |
| H 37-1933   | Trojan      | Co313      |
| H 38-2915   | Gloria      | Co331      |
| H 38-4443   | Q. 28       | Co413      |
| H 39-3633   | P.R. 905    | Co432      |
| H 39-5803   | P.R. 1000   | N. Co. 79  |
| H 39-7028   | D. 62/43    | N. Co. 310 |
| H 44-3098   | G. 176      | C. C. 101  |
| P.O.J. 3016 | Ebene 1/37  | C.C. 102   |
| P.P.Q.      | C.P. 44/155 |            |

137. Approximately 119,000 cuttings of varieties of the B.45', B.46', B.47', B.48', B.49' and B.50' series were distributed to the six sugar estates for multiplication and trial.

138. Forty-four field experiments were reaped in Trinidad during the year; of these, twenty were variety trials.

139. B.41227 occurred in two plant cane and eight ratoon trials; in eight trials it gave higher yields of cane than the standard varieties, B.3337, B.37161 and B.37172. In juice quality, B.41227 was inferior to B.37161 and B.37172, but appreciably better than B.3337.

140. B.4362 was reaped in three plant cane and ten ratoon trials. In yield of cane, it was no better than the standard varieties and its juice quality was extremely variable.

141. B.4744 was reaped in two plant cane and one ratoon trial; in each trial its yield and juice quality was similar to that of B.37172.

142. In two trials, one plant cane and one ratoon, B.47419 easily out-yielded the standard varieties and its juice quality was similar to that of B.37172.

143. The varietal position during the year is given in Table XVII which shows the per cent. of total acres reaped in Trinidad for each variety. It is to be noted that there has been a further appreciable increase in the acreage of B.37172, while the acreage of B.34104 and to a lesser extent B.3337, have decreased. The acreage of B.37161 has remained constant.

## CITRUS

144. Attention was devoted mainly to citrus fruits during 1954; the research programme planned in 1953 to obtain information on methods of increasing the efficiency of production was followed and efforts at advising and guiding citrus growers towards the same objective continued. The unrelieved shortage of trained assistance limited the extent to which work could be undertaken on other crops. However, some new species of fruits were introduced for observation, and study of methods of vegetative propagation was maintained in the glasshouse.

145. Several new projects were commenced in 1954 and a number of those in progress during 1953 terminated. About 30 acres in the Main Buildings section at the Central Experiment Station were cleared and used for experiment; 11 acres of producing orange orchard and 4 acres of producing grapefruit were also added to the area on which horticultural trials were laid down. The observations on grapefruit at La Reunion were discontinued; further information to be obtained from them is limited by the layouts employed.

146. Two new observation plots were laid out at Alandale Estate to study lime Dying Out Disease in fields which had gone out of seedling limes on account of this disease.

147. Plans were formulated for carrying out a field management trial with Valencia oranges planted on Piarco fine sand, a soil type which may become increasingly used for growing citrus.

148. *La Reunion Grapefruit Trials*—After the harvesting of the 1952-53 crop experimental treatments were discontinued and the area reverted to a demonstration orchard. The difficulty of combating praedial larceny effectively made it impossible to ensure absolute reliability of yield figures recorded. Data already collected were regarded as providing sufficient information for general use in extension as well as a basis for planning more detailed and precise trials.

149. In all the trials a response was obtained from nitrogen fertilization. With increased over-all yields there were higher percentages of culls but the total of selects was up to 36 per cent. greater from 23 year-old trees receiving a total of 16 lb. sulphate of ammonia per annum than from the controls in the *Varying Nitrogen* plots.

150. Significant total increases did not result from application of phosphate and potash but external appearance of fruit was remarkably improved. Culling mainly due to blemishes caused by scab and melanose, averaged 14 per cent. for trees fertilized with nitrogen alone whereas it amounted to approximately 5 per cent. for trees which received phosphate as well. Variability in fruit size was less noticeable in the case of the potash-fertilized trees than with the others.

151. In the *Minor Element* observations the trees which were treated with zinc and magnesium showed, over the duration of the experiment, slightly higher yield than the others and a lower percentage of culls due to skin blemishes. No striking responses were obtained from manganese.

152. Tropical Kudzu proved the most successful cover crop of those tried. The grapefruit trees in the Kudzu plots yielded more than trees in the other plots in regard to both totals and selected fruit.

153. *Rootstock and Management Trials*—The experimental treatments were maintained and measurements of growth and yield recorded for each tree. The variability between plants has continued to be considerable and no uniform differences attributable to rootstock or management are easily discernible from visual observation.

154. Even after repeated supplying, gaps occurred as a result of the death of several plants in the lime plot; these consisted of seedlings killed by root disease and plants budded on sweet orange rootstock killed by gummosis.

155. Cowpea was substituted for sunhemp as the annual wet season cover during 1954. The spring sowing yielded excellent growth which was disced under during the petite careme; development of the plants of the autumn sowing was, however, retarded by the prolonged wet weather. The perennial Kudzu cover was cut in the dry season and left as mulch on the beds; recovery was entirely satisfactory and a dense mat was again established early in the wet season.

156. Herbicidal control of the weeds continued to be difficult. The use of knapsack sprayers made the operation tedious and expensive while the layout of the field placed numerous obstacles in the way of spraying with a tractor. Hand weeding was necessary on each occasion after application of pentachlorophenol herbicides—three times during the year—to rid the beds of some persistent tufts of razor grass.

157. *Transplanting Trials*—Satisfactory growth of all trees was recorded generally. At St. Augustine and El Reposo a number of plants died as a result of unfavourable local conditions but the deaths apparently bore no relation to the experimental treatment. It appeared that no difference in performance was readily noticeable between plants set "bare-root" and those set "en pilon".

158. *Tree Management Trials*—Routine maintenance was carried out on the experiment to determine the effect of training methods applied at different time to young Valencia orange trees. Damage by bachacs to young shoots developing after formative pruning, in the dry season, tended to suppress growth until effective control of the pests was brought about with Aldrex.



159. In addition to the training experiment at El Carmen two experiments on tree management of Valencia orange were laid down in the Main Buildings section of the Central Experiment Station. Observations were started on:—

- (a) Height of bud insertion,
- (b) Height of head formation.

The plants, propagated at St. Augustine, were set out in August and November respectively; all are on sour orange rootstock.

160. The experiments were planned to obtain information on orchard performance and gummosis susceptibility of (a) trees budded at 6, 9, 12, 18, 24 inches above ground (b) trees headed at 12, 18, 24, 30 inches above ground after being budded at a uniform height of 12 inches. Randomised block layouts were used for the experiments and planting was done on the contour. As a result the plots are not uniform in shape though each contains the planned number (six in one experiment, four in the other) of trees.

161. Establishment was successful and no supplying was required up to the end of the year when it was observed that there was active growth in all plots.

162. *Field Management Trials*—Two trials were designed to test different systems of field management in the growing of the Valencia orange. One of these was sited in a private orchard planted on Piarco Fine Sand near to the Central Experiment Station; the trees were planted in April, 1952 and had been subjected to good standard estate practice. The other trial was located on fine sandy loam on the Station; here experimental trees have not yet been set out although guard rows were planted in August.

163. In the experiment located off the station the layout consists of five randomised blocks and the main treatments of three types of cover crops have been split for method of management; the sub-plots are further split for applications of ground limestone and magnesium as fertilizer.

| <i>Main Plots</i>         | <i>Sub-Plots</i>             | <i>Sub-Plots</i>        |
|---------------------------|------------------------------|-------------------------|
| 1. Natural Weed Cover     | (a) Mown twice a year        | (i) Control             |
| 2. Perennial legume cover | (b) Discd under twice a year | (ii) Lime               |
| 3. Annual legume cover    |                              | (iii) Magnesium         |
|                           |                              | (iv) Lime and Magnesium |

The soil of the area is known to be highly acid and deficient in exchangeable calcium; in addition the young orange trees were seen to be showing symptoms of magnesium deficiency.

164. On the station the design is one of 4 randomised blocks of 9 treatments as follows:—

1. Standard estate cultivation;
2. Peasant-type intercropping;
3. Perennial legume cover left undisturbed;

4. Perennial legume cover disced twice a year;
5. Perennial legume cover mown twice a year;
6. Annual legume cover disced twice a year;
7. Annual legume cover mown twice a year;
8. Natural weed cover disced twice a year;
9. Natural weed cover mown twice a year.

Each plot is a rectangle containing five trees spaced hexagonally 22 feet apart and a single guard row separates adjacent plots.

165. The centre tree of each plot will be given complete fertilisers while among the four on the periphery the following differential fertilizer treatments will be distributed at random :—

1. No fertilizer;
2. Nitrogen and phosphate;
3. Nitrogen and potash;
4. Phosphate and potash.

166. *Orange Harvesting Trials*—In an orchard of mixed varieties of orange at El Carmen observations were commenced on the effect of spraying mature fruit with plant growth substances to prevent drop and to regulate the time of harvest. Sprays of the sodium salt of 2,4-dichlorophenoxyacetic acid, at the equivalent concentration of 20 parts per million of acid, and proprietary formulae containing naphthaleneacetic acid were applied at the rate of 3 gallons per tree. Experimental treatments were arranged for spraying the trees as follows :—

1. January—one;
2. January and March—twice;
3. January, March and May—three times.

167. Records were made of the number and weight of fruit shed by each tree from the start of the experiment up to the end of September when all fruit remaining on the trees was harvested. Samples of the collected fruit were analysed at regular intervals to determine whether any differences in juice quality were brought about by the sprays. Fruit was also picked from a number of trees every month from April to September and analysed. Statistical analysis of the data was not completed at the end of the year and it has been planned to continue the observations in 1955.

168. Delay in harvest did not seriously affect the following crop, apparently, as there were no remarkable differences in time of flowering, or extent of set, between experimental trees and others. Because of the pronounced off-season bloom, experienced generally, several of the trees held in June, flowers, small green fruit and brightly coloured ripe fruit.

169. *Epiphyte Control on Grapefruit Trees*—Investigation of the possibility of control of epiphytes and plant parasite on grapefruit trees by the use of "Hormone" herbicides was commenced at Arena. In October, at the end of the petite careme, a number of trees were sprayed with 2,4-dichlorophenoxyacetic acid at a concentration of 25 parts per million.

170. It was observed that a large number of the colonies of wild pines and moss dropped off after three weeks but quite as many remained firmly attached on treated trees; there was little dropping of wild pines from untreated trees. Observations are to be made on the effect of additional sprayings.

171. *Citrus Collection*—The collection of species and varieties increased considerably during the year. For convenience they were divided into two groups—one containing commercial varieties which yield edible fruit and the other varieties used mainly for rootstocks. The plants were set out in two separate orchards.

172. In addition to the species and varieties grown in different parts of the colony, the Hamlin orange, Calamondin, Eustis limequat and a variety of Bergamot grown from seed imported from Calabria (where the most well known groves of Bergamot exist) were introduced from Dominica and Kumquat brought in from Jamaica.

173. Growing of the different strains of "Bergamot" for comparison was continued and it was concluded that those obtained from Tobago were quite different from true Bergamot. The Jamaica and Dominica Bergamots seemed almost identical in appearance and quite distinct from the Tobago strains. The trees grew quite vigorously but are not expected to bear fruit for another year.

174. *Citrus Nursery Observations*—Much progress was made in developing a technique for operating of a citrus nursery at the Central Experiment Station. Seedlings of common rootstock species—sour orange, rough lemon, sweet orange, Dominica wild grapefruit, Rangpur lime—were grown in nursery rows and worked successfully with Marsh grapefruit, Valencia orange, West Indian lime and other commercial varieties of citrus including Ortanique which is at present being considered for possible expansion in Trinidad. The plants produced were used for experimental purposes when practicable and some of the remainder were sold.

175. Testing of potential rootstocks continued. Seedlings of *Citrus mitis*, *Citrus Ichangensis*, *Citrus hystrix* and Cleopatra mandarin were grown in nursery rows for budding in 1955. Many of the plants died as a result of waterlogging of the beds during the prolonged heavy rains of November and December but there were left sufficient survivals to carry out the observations envisaged.

176. In a number of simple comparisons made at St. Augustine, during January to March, between wrapping the bud completely after insertion and leaving the "eye" exposed, when sour orange rootstocks were budded with Valencia orange, it was found that no consistent differences in takes were obtained using waxed tape for binding the union. Wrapping with raffia instead gave as good results and, because of the convenience of this method, it was planned to give it extensive trial. It is known that raffia is used almost exclusively for binding buds in Jamaica.

177. A nursery experiment to determine the effects of different heights of bud insertion of Valencia orange scions on sour orange rootstocks was also carried out at St. Augustine. Seedlings raised from seed sown in March, 1953 and transplanted to nursery rows in August the same year were budded in February, 1954. The generally accepted budding height of eighteen inches was employed as a standard for comparison and it was noted that, at the time of budding, the plants that were ready (a calliper of  $\frac{3}{8}$  inch at the budding height being used as the criterion) were in the following ratio :—

|        |        |         |         |         |
|--------|--------|---------|---------|---------|
| 6 ins. | 9 ins. | 12 ins. | 18 ins. | 24 ins. |
| 132    | 121    | 126     | 100     | 81      |

There was a slight anomaly at 9 inches due to uneven growth of the seedling stems at approximately that height from the ground level.

178. Records were made of the percentages of takes after (a) three weeks alive, (b) growing at 3 months and (c) available for transplanting at six months from budding. These are tabulated below:—

| Age from Budding |     |     | 6 inches | 9 inches | 12 inches | 18 inches | 24 inches |
|------------------|-----|-----|----------|----------|-----------|-----------|-----------|
| Three weeks      | ... | ... | 83%      | 84%      | 85%       | 89%       | 94%       |
| Three months     | ... | ... | 77%      | 80%      | 76%       | 87%       | 86%       |
| Six months       | ... | ... | 70%      | 78%      | 76%       | 79%       | 76%       |

The best performance resulted from budding at a height of 18 inches but the greatest number of plants resulted from budding at 12 inches; the ratio of budded plants produced was 92:94:96:79:61 in ascending order of height of bud insertion. It was easily apparent that more vigorous growth and better-shaped plants resulted from the lower buddings so that it was concluded that the most satisfactory height for budding was 12 inches when only production of nursery trees is considered.

179. The general belief that plants budded lower than 18 inches are prone to attack by gummosis has not always held true in Trinidad; the height at which the first crotches (highly susceptible points) form is believed to be of importance also. To test this under controlled conditions the plants budded at different heights were used for planting the Tree Management Experiments at the Central Experiment Station to which reference has already been made.



180. *Dying Out Disease of Limes*—During the year all but one of the lime seedlings transferred from the La Reunion glasshouse to the field at El Carmen died from root disease. The rate at which the plants died was not different for the two types of seedlings and no significance was attached to the fact that that remaining was one of those unbranched before transplanting.

181. More of the lime plants set out in "diseased" soil died during 1954 than of those set in "healthy" soil at the Piarco plot. The evidence of the presence of a soil borne pathogen was not, however, regarded as conclusive.

182. In the Graft Transmission Trial at El Carmen deaths were no more frequent in lime plants budded with scions from diseased trees than unbudded plants. Layers from healthy trees apparently became affected quite as often as layers from diseased trees. Control of this experiment as well as the Soil Transmission Trial was transferred to the Plant Pathologist in December.

183. Two additional experiments for the study of Dying Out Disease were commenced during the year; they were planted at Alandale Estate, Toco, where a large field of seedling limes had succumbed to the disease within the past five years. Observations are being carried out on the rate of infection of plants grown from :—

1. Lime seedlings;
2. Cuttings from healthy trees;
3. Cuttings from diseased trees;
- 4-6. Lime budded on to three different rootstocks; Sweet orange, Dominica grapefruit, Rangpur lime;
- 7-9. Lime seedlings as rootstock for sweet orange, Dominica grapefruit, Rangpur lime.

It is expected that information will be obtained as to whether the disease attacks lime roots only and whether the top where the plants are budded exerts any influence on susceptibility to the disease. One experiment was laid out as a 9 x 9 Latin square and the other as 4 randomised blocks of 9 plots each.

184. *Withertip Resistance*—The Withertip-resistant trees were kept under observation; they continued free of the disease. Two flowered and bore fruit which were not sufficient for proper assay but appeared to be quite distinct from the commercial West Indian lime in shape, rind and juice characters.

#### TROPICAL AND SUB-TROPICAL FRUITS

185. The museum collection was extended and divided into two orchards, the smaller of which accommodates mainly sub-tropical introductions. Here the Natal Plum flowered but failed to set fruit while satisfactory crops were produced by the two plants each of Kadota and Mission fig.

186. Notable new addition from abroad included Durian—*Durio zibe-thinus*—and Rambutan—*Nephelium lappaceum*—from Malaya, Cocona—*Solanum hyporhodium* from Costa Rica via the Imperial College of Tropical Agriculture, a special strain of West Indian Cherry—*Malpighia glabra*—from Puerto Rico and selected Guava—*Psidium guajava* from British Guiana. These were all propagated as seedlings in the glasshouse and transferred later to the orchard for observation in the field.

187. New avocado varieties were introduced as budwood from Jamaica and Dominica. Of these only a single one from Dominica survived as a result of the poor quality of stocks available for working the scions on arrival in summer. Slightly better results were obtained with mango budwood imported from Jamaica; plants of three varieties brought in—East Indian, Number Eleven and Haden—were growing satisfactorily at the end of the year.

188. A collection of commercial varieties of pineapple was started and three—Ripley, Bullhead, Natal Queen—were brought from Jamaica. These were planted in an observation plot together with Trinidad selections of Sugar Loaf and Black Antigua.

189. *Windbreaks*—Good growth was observed on Pomerac, Galba, Mahogany Gliricidia and Casuarina windbreaks but other species tried proved disappointing; several died before the end of the dry season. Seed of Persian Lilac—*Melia Azedarach*—received from India were germinated in the glasshouse with limited success; the resulting seedlings are to be tested for use as a decorative windbreak.

190. *Glasshouse*—The glasshouse was removed from La Reunion and re-erected on the main compound of the Central Experiment Station during the year. It became available in summer for propagation studies with fruit and others crops. Techniques for bench grafting of mango and rose were tried, but have not yet been satisfactorily developed as, with the methods used, a high mortality resulted.

191. Rooting of cuttings of seedless pomerac, white sapote, peach, Natal plum, Barbados cherry was highly successful with or without the use of growth-promoting substance. Indolebutyric acid-talc powder dip shortened the period required for rooting with most of the species tried.

192. Terminal cuttings taken from mango seedlings about a year old rooted readily in five weeks in a mixture of sand and cocopeat but cuttings of comparable age failed to produce roots although they formed extensive callus.

*Selection*

193. Selected seed nuts from high-yielding parent trees growing on local estates as well as importations from Ceylon have been planted in an isolated ten-acre block at the Central Experiment Station. The soil type is not particularly suited to this crop but it is hoped that this disadvantage may not affect early production and that the collection of a reasonable amount of superior seed nuts will be possible from parents of known high-yielding capacity. In the meantime a coastal strip of more suitable soil has been selected at Tyrico Bay and the trial has been duplicated there in a large degree.

194. Criteria for selection were based upon habit of tree including proper radial arrangements of branches, size of nut, meat of nut and annual output of nuts. At a later stage final selection criteria will also include the percentage of oil in copra.

195. Trees in the Selection Block at Central Experiment Station have started to bear and appear to be in good health. A few cases of Red Ring disease have appeared and these were dealt with promptly.

*Red Ring Disease*

196. This disease continues to be very prevalent. It is apparent, however, that on established estates where continuous and frequent sanitary measures are carried out incidence of the disease is kept within small proportions. Losses are greatest on two categories of estate:—

- (a) Those estates where sanitary measures are poor, and where diseased and dying trees are not removed.
- (b) Those estates which have substantial blocks of young trees at a susceptible age. On these latter estates the position is worsened if no sanitary measures are carried out.

197. Many growers complain of the high costs involved in cutting and burning diseased trees, and also of the difficulty in burning in wet weather.

198. Investigations are being made into the possibility of poisoning trees with herbicides to destroy the parasites within, thereby reducing costs and the risk of spreading infective material.

## OIL PALMS

199. The Central Experiment Station plantings are now well established, but seed production has been very low. They have now been protected from grazing cattle and improvement should take place.

200. At O'Meara Breeding Unit the plantings have suffered considerably from fire; but even taking this into account they do not seem to be making satisfactory growth.

*Planting Material and Nurseries*

201. Reference has been made earlier in this Report to the signing of a 15-year contract for Cavendish bananas. During the latter part of the year some 91,000 suckers of Cavendish types—Lacatan (Jamaica), Giant Governor (Martinique) and Dwarf Governor (Trinidad)—were obtained through the Marketing Board and established in nurseries by the Department in Trinidad and Tobago. In establishing these nurseries Government's object has been to provide a limited number of good plants of the exportable types so that each grower may make a start for himself. The plants are to be sold at 10 cents each which is well below the cost of production and some 50,000 will be ready for sale between April and July, 1955. The production of most of the planting material is being carried out by the staff of the Central Experiment Station. The majority of the plants have been established on 120 acres of loam soil at Golden Grove under partial shade (to reduce the incidence of Leaf Spot disease) provided by coconuts. This land which has been taken over from the Prisons Department is conveniently situated near the Central Experiment Station thereby facilitating supervision and the supply of equipment. Additional nurseries have been established on the Central Experiment Station, the St. Augustine Station and on the district stations at Louis d'Or and Mt. St. George in Tobago.

202. The Cocoa Board imported some 50,000 Cavendish banana suckers during the year. 38,000 were distributed to participants in the Cacao Subsidy Scheme and the remainder allocated to the Department for planting in its nurseries.

203. A survey carried out by the Extension Staff during the year showed that there were some  $1\frac{1}{4}$  million stools of exportable types of banana scattered throughout Trinidad and Tobago in a largely uncultivated state. In addition to encouraging growers to make the best use of the planting material they have the Department, in co-operation with the Marketing Board, started a local purchasing scheme for the supply of plants. This continues to operate successfully.

*Investigations*

204. Spraying for the control of Leaf Spot disease was begun in October, 1954. This disease caused by the fungus, *Mycosphaerella musicola*, can be controlled economically in other banana growing countries by the use of copper-bearing fungicides. Investigations being carried out at the Central Experiment Station are designed to determine, under local conditions, the number and frequency of spray cycles required, the most suitable equipment for applying fungicides and the most satisfactory fungicides and their carrier media.

205. Moko disease caused by *Pseudomonas solanacearum* is also being studied to determine the predisposing factors of spread, and the most feasible preventive measures.



206. Control of the Banana Weevil Borer, *Cosmopolites sordidus* (Germ.) by field sanitation measures and by treatment with insecticides of the chlorinated hydrocarbon group, is also receiving attention.

207. Fertilizer trials have also been laid down on the Central Experiment Station.

## RICE

### *Rice Expansion Programme*

#### *Plum Mitan and Fishing Pond*

208. The main drainage and irrigation works of these two schemes were almost completed by the Works and Hydraulics Department. 112 acres at Fishing Pond and 134 acres at Plum Mitan were rented to farmers on temporary and seasonal agreements pending the completion of the internal layout on the schemes, during the crop season. There is now a demand for lands on these schemes for cultivation in dry season crops. Internal development work on certain sections of these schemes is being planned for 1955.

#### *Caroni Savannah*

209. The main drainage and irrigation works have been completed and their maintenance is being carried out by the Works and Hydraulics Department. The lands are still saline and the rate of leaching of chlorides is being observed by the Agricultural Department. Meanwhile the problems of future land allocation in this scheme are under review.

#### *Central Experiment Station paddy fields*

210. An area of  $11\frac{1}{2}$  acres was used by the Economic Botanist for experimental purposes and rice selection work.

211. An area of approximately 98 acres was cultivated by the Rice Officer for seed multiplication. In this area the work of levelling terraces and road construction was continued but could not be completed by the end of the dry season and must, therefore, be completed in 1955. The crop was reaped in November and December under very wet conditions and there were losses of yield and quality. After deducting the paddy unsuitable for seed the following amounts of dried, winnowed paddy are available for distribution subject to satisfactory germination tests.

|              |     |     |     |                              |
|--------------|-----|-----|-----|------------------------------|
| D. 52/37     | ... | ... | ... | 52,000 lb.                   |
| D. 110       | ... | ... | ... | 54,600 ,,                    |
| Sughandi     | ... | ... | ... | 27,300 ,,                    |
| <b>Total</b> | ... | ... | ... | <b>134,400 lb. (60 tons)</b> |

### *Seed Distribution 1954*

212. The following quantities of seed paddy were distributed to farmers with the help of the Extension Service. Revenue from sales of rice amounted to \$4,614.48.

|                  |     |     |     |                        |
|------------------|-----|-----|-----|------------------------|
| D. 52/37         | ... | ... | ... | 9,555 lb.              |
| D. 110           | ... | ... | ... | 14,018 ,,              |
| Sughandi         | ... | ... | ... | 7,243 ,,               |
| Hill Paddy (5-2) | ... | ... | ... | 100 ,,                 |
|                  |     |     |     | <hr/>                  |
|                  |     |     |     | 30,916 lb. (13.8 tons) |
|                  |     |     |     | <hr/>                  |

### *Paddy Competitions*

213. Competitions were organised on the Plum Mitan and Fishing Pond Schemes to encourage farmers to cultivate pure line paddy.

214. Additional statistical data pertaining to the Rice Industry of Trinidad were obtained by a Temporary Agricultural Assistant employed for that purpose. This information will be collated early in 1955.

215. Mr. L. Lord, O.B.E., Assistant Adviser in Agriculture to the Secretary of State visited Trinidad, during October, to review rice development in the Colony as a result of an application to the Secretary of State for financial assistance to carry out investigational work in mechanised rice production.

216. Arrangements were made through the Secretary of State for a grant from F.A.O. which provided for the services of two consulting Engineers to advise on the development of the main Swamp areas in Trinidad. The Engineers arrived towards the end of the year and are carrying out investigations. In addition \$100,000 was provided from Colonial Development and Welfare Funds for further survey work in the Caroni and Nariva Swamps.

### *Seed Production*

217. Due to the absence on leave of the Economic Botanist from April to November all work on rice was concentrated on maintaining and increasing existing stocks. Pure line seed is now available for the first time for multiplication in the main Central Experiment Station paddy fields.

218. The following varieties are available:—

Sughandi  
D. 52/37  
D. 110  
Red American.

Yield figures are not yet available.

### *Variety Trials*

219. No variety trials were attempted this year. 58 new varieties were introduced in 1954.

### *Fertilizer Trials*

220. One fertilizer trial was laid down to investigate the manurial requirements of the new experimental area. Results are not yet available.

221. The assemblage and classification of local Trinidad varieties continued.

222. The change from Freeman Road Rice Area to the New Area at Central Experiment Station was completed. The land and water are both extremely good and yields approaching 4,000 lb. clean dry paddy are anticipated from some fields. A very marked improvement on the previous year has been noticeable in the general fertility of the area, and it is anticipated that this will continue for another year or two until a stable condition is reached.

### *Stem Rot (Sclerotium oryzae)*

223. Investigation of reported low yields at Cacandee (Caroni Rice Irrigation area) revealed stem rotting and the frequent presence of *Sclerotium oryzae*. This fungus, long present on rice in Trinidad, does not normally cause damage. The fields affected were situated at the lower part of the area and over which water from the area as a whole must drain. These fields are therefore the last to be free of water after flooding and the drop in yield may be attributed to this poor drainage rather than to active pathogenicity by the fungus.

### OTHER FOOD CROPS

224. Although selected material of cassava and Pigeon Peas is available the demand remains very limited.

### SISAL

225. The sisal planted at O'Meara Breeding Unit is progressing satisfactorily. It is now four years old and 3 feet high on the average.

### COVER CROPS

226. Forty-six new species of legume were introduced for fodder and possibly as cover crops. It is doubtful whether many of these will be useful although species of *Indigofera* may have some possibilities.

### GRASSES

#### *Central Experiment Station*

227. At the Central Experiment Station a further 35 acres were planted in Elephant Grass, bringing the total area under stool forming grasses to 67.5 acres. A new rough paddock of approximately 8 acres was fenced and in addition some 38 acres of the fodder fields were also fenced to permit grazing. Throughout the year, all fodder fields including 12 acres of Kudzu, were strip grazed, with an electric fence, as frequently as possible. Records were kept of the number of hours grazing and number of animals for each period.

228. Two one-acre paddocks were successfully established in Pangola and Locuntu Grass, but a similar planting of Mexican Grass failed. A two acre planting of the legume, Hairy Indigo, at first proved unpalatable to the stock but later it was overgrazed and finally destroyed.

#### *Carlsen Field*

229. In 1953 a block of approximately 30 acres at Carlsen Field was planted in the following:—

Guinea Grass, Guatemala Grass, Elephant Grass, Elephant Grass and Kudzu, Kudzu alone and Toco Grass.

In addition an area was left unplanted and mown regularly. At present all of the grasses and the Kudzu are well established but growth in general is poor and patchy and nutrient deficiency symptoms are evident; despite the fact that a basic dressing of complete fertilizer was applied throughout. It is intended to investigate the effect of further fertilizer applications and also if possible, the effect of improved drainage.

#### *Waller Field*

230. Although a start was made on the preparatory cultivation of a 3 acre block at Waller Field on which occurs the three poorer Waller Field soil types, the work had to be postponed due to the onset of the rains. It is apparent that a great deal of cultivation and drainage will have to be carried out before any form of grass can be planted.

#### *O'Meara Savannah*

231. The main soil type of this area is Valencia Fine Sand which also occurs at Waller Field. Four acres of land at the O'Meara Breeding Unit were chiselled and harrowed and planted to Elephant Grass, Toco Grass and Kudzu and Hairy Indigo. Although the application of fertilizer was considerably delayed, a good establishment of the Elephant Grass was obtained and the growth of the Kudzu and Toco Grass is most encouraging.

### SOIL SURVEY

#### *Trinidad*

232. The survey of South Trinidad continues and 10,000 acres of the Moruga and San Francique areas were completed.

233. Three special surveys were began:—

- (a) In the Caroni Swamp to obtain basic information for F.A.O. consulting engineers.
- (b) In the Moruga (River) Area to ascertain the potentiality of the area for agricultural development.
- (c) On the Central Experiment Station with a view to the preparation of a Soil Conservation Map.



234. Farmers have shown a keener interest in their soils and on their request a number of surveys were carried out for advisory purposes.

235. Five thousand, seven hundred and seventy analyses were completed in the Soils Laboratory. These include :—

- (a) One thousand nine hundred and twelve on sugar cane from experimental plots at Central Experiment Station. This is the first time that the Department has carried out its own sugar cane analyses.
- (b) Six hundred and eighty-seven on samples from the Caroni Swamp.
- (c) Four hundred and fifty-seven on samples from Soil Conservation plots.

### *Soil Conservation*

#### *Run-off Trials*

236. The plots and installations at L'Esperance were maintained throughout the year and data collected.

237. At Rio Claro the establishment of plots and installations was completed and data were collected for the whole of the past wet season.

238. The Sugar cane Run-off Plots at the Central Experiment Station also yielded data throughout the past wet season.

239. Two of the three watershed run-off trials planned in co-operation with the Forest Department were completed and data for determining run-off characteristics of natural Forest have been collected. The compilation of data obtained in all the trials mentioned above cannot be completed in time for inclusion in this Report and will be recorded in the Report for 1955.

240. Studies on the two small watersheds selected at Five Rivers to compare erosion conditions under shifting cultivation and conservation farming were continued.

241. Further progress was made in the establishment of a Land Use Demonstration at Maracas Land Settlement on lands previously under forest.

### APICULTURE

242. It was a poor year for honey production and only 27,499 pounds were exported, compared with 47,233 pounds in 1953. Prices of produce remained steady throughout the year, at approximately \$8-\$10 per 56-pound tin, while honey was retailed at approximately 30 cents per one-pound bottle. Bees' wax realized 84c.-\$1.00 per pound.

243. Fair quantities of beekeepers' supplies were imported. During the year, \$4,000 of United States currency was reserved for allocation to bona fide beekeepers to enable them to purchase certain supplies from the United States

which have been found to be more adaptable to local conditions than those from other sources. Imports can only be made on the recommendation of the Inspector of Apiaries.

244. As far as is known, there were no infectious diseases of bees in the Colony. However, many colonies of bees were lost during the year due to infestation of wax moths as a result of the heavy rains during the latter part of the year.

245. During the year new Departmental apiaries were established at the Central Experiment Station, at the Demonstration Stations at Penal and Louis d'Or as well as the Botanic Station, Tobago. Prior to 1954, apiaries were established at St. Augustine, El Reposo, Rio Claro and La Pastora. At the end of the year, the total number of colonies established was 105.

246. At the Headquarters Apiary at St. Augustine, purebred Italian Queens imported in 1953 are doing well and a number of Queens have been raised from them. Of these, 40 were transferred to Departmental apiaries and 61 sold to 10 beekeepers. Conditions during the latter part of the year were unfavourable for the rearing of Queens and the production which had been planned received a severe setback.

247. During the year, the Inspector of Apiaries paid a number of visits to beekeepers throughout the Colony and was largely instrumental in the formation of a Beekeepers' Co-operative Society. Lectures were given by him to students of the Eastern Caribbean Farm Institute as well as to school teachers. Demonstrations and displays were given at the Annual Show of the Beekeepers' Association, the Poultry Association and the Goat Society as well as at seven Cane Farmers' and Peasants' Livestock Shows.

## LIVESTOCK

### *Animal Health*

#### *Incidence of Animal Diseases in the Caribbean*

248. The Animal Diseases Reporting Service of the Caribbean Commission continued to operate during the year. The summary of reportable diseases as occurring in this Colony during the year is shown in Table XVIII.

#### *Notifiable Diseases*

##### *Paralytic Rabies (Bat-transmitted)*

249. Following an outbreak of this disease in November 1953 at Moruga, the incidence spread further north in the St. Mary's district and sporadic cases occurred during the first six months of the year. During July the disease assumed major significance in the Penal Rock Road area extending to Barrackpore. The outbreak took a heavy toll principally amongst cattle and it is noteworthy of record that the last reported incidence of the disease in this particular area was during 1937. No accurate records are available of the number of deaths since these were not always reported.

250. The peak of the outbreak was passed in late August after which there was a gradual decline in the number of cases reported. As a result of this outbreak the vaccination and bat destruction campaigns were greatly intensified in the infected and surrounding areas.

251. In addition to this epizootic in the southern area, the disease appeared in the Mayaro-Guayaguayare district. The first case was reported in January and was followed by others during March and August. An active vaccination campaign was carried out within the affected areas.

252. The number of reported cases was 270. However, there is no doubt that this figure does not record a true picture and it is considered that a more representative figure would be 400 cases.

253. While the former type of brain tissue vaccine was used up to July, this was replaced, at least in cattle, by the recently developed avianised modified live virus vaccine as produced by the Lederle Laboratories. Two significant features of this product are the greatly reduced cost and the anticipated increased antigenic response compared with tissue vaccines. The dosage used in cattle from one month and upwards, is 5 c.c. intra-muscularly. Further information on the use of this vaccine in animals other than cattle, is to be found in a later section of this Report.

254. The following classes of livestock were vaccinated:—

| <i>Cattle</i> | <i>Water Buffalo</i> | <i>Horsekind</i> | <i>Goats</i> | <i>Sheep</i> | <i>Total</i> |
|---------------|----------------------|------------------|--------------|--------------|--------------|
| 16,323        | 627                  | 1,660            | 1,392        | 10           | 20,012       |

During 1953, a total number of 4,508 animals was vaccinated.

255. As a result of this severe outbreak, an appeal was made to the World Health Organisation for a survey of the situation with a view to formulating a permanent programme of control. As a result, Dr. Aurelio Malago Alba, W.H.O. Consultant on Rabies, visited the Colony during the period 11th-25th August, 1954.

256. Following this visit and after joint discussions with the director of Medical Services and the Director of Agriculture, proposals were submitted for an extensive control programme for 1955 and thereafter. This envisages a routine mass vaccination campaign throughout Trinidad in conjunction with accelerated and intensified bat destruction measures.

257. A large number of livestock owners continue to discredit vaccination and refuse to avail themselves of the free service offered. When faced with an outbreak and the death of their animals, their demands for vaccination initially often prove both exacting and embarrassing. These subsequently lessen and frequently cease when the rabies scare is over. In the proposals mentioned, provision is being made for compulsory vaccination to be carried out as a routine rather than as an intermittent prophylactic measure.

258. In an effort to make livestock owners more "vaccination conscious" the need for an educational campaign is accepted and the proposed approach will be to give wide publicity to the subject beforehand in areas where vaccination is contemplated. A new approach in this field will be the showing of a film on this disease which has been produced by the Government Film Unit in co-operation with this Department.

#### *Newcastle Disease*

259. The incidence of this disease still continues but has not increased. The value of prophylactic vaccination is now well accepted amongst poultrymen, and it is pleasing to record that this practice is being carried out to a greater extent.

#### *Swine Fever*

260. It is very gratifying to record that the Colony was free of this disease during the year. This is the second consecutive year of freedom.

261. Prophylactic vaccinations were carried out as a routine measure of control, especially in those areas in which the disease had previously been reported.

262. A total number of 1,263 pigs was vaccinated compared with 1,458 in 1953 and 1,206 in 1952.

#### *Tuberculosis*

263. Table XIX shows the numbers, classes and percentages of reactors to the tuberculin test carried out during 1952-1954.

264. Under local health regulations, 2,761 dairy cows and heifers were tuberculin tested of which 11 gave a positive reaction, a percentage of 0.4. Corresponding figures for 1954 were 1,876 tested, 11 reactors, a percentage of 0.6.

265. Routine tests were carried out in the herds at the three Stock Farms. No reactors were found.

#### *Non-Proclaimed Diseases*

##### *Poultry Diseases*

266. Those observed included Fowl Pox, Leucosis complex, Coccidiosis, Avitaminosis and malnutrition, Coryza, Infectious Bronchitis and Chronic Respiratory Disease.

##### *Miscellaneous Diseases*

267. Those observed included Strangles in mules; Acetonemia in cattle and pigs; Mastitis in cattle and goats; retained placentae in cattle; Tetanus in equines; parasitism, especially internal, in all classes of stock, in particular in goats and sheep; dystobia in all classes of farm animals; bovine and equine indigestion in various forms; wounds and traumatism in general.



### *Veterinary Attendance Police Horses and Dogs*

268. The Department is responsible for these duties. During the year 63 visits were made to these animals when professional services were rendered.

### *Veterinary Practice Service*

269. This service, whereby certain district Veterinary Officers undertake private practice as a service to livestock owners in distant rural areas was in operation during the year.

270. Two changes were made in the conditions. Formerly an owner could not obtain this service unless he resided more than 20 miles from the home of a private practising veterinarian. This distance has been reduced to 12 miles. In addition, the scale of fees for attendance to small animals (sheep, goats and pigs) was reduced.

271. Four officers, stationed in the Northern, Southern and Eastern districts of Trinidad and in Tobago, carried out the service. 354 calls were made and \$1,123.12, in fees, were paid into general revenue.

### *Veterinary Diagnostic Laboratory*

272. At the beginning of the year, this laboratory was removed from the St. Joseph Stock Farm to the Central Experiment Station at Centeno.

273. The scope and extent of activities has been widened by the posting of a Veterinary Investigation Officer and by the provision of increased laboratory space equipment and staff.

274. A total number of 27,160 specimens were handled at the laboratory during the year.

### *Investigational Work*

275. During the year the following projects were undertaken:—

#### *(A) Preliminary serological survey on the incidence of Chronic Respiratory Disease (C.R.D.) in Poultry*

As a result of the very high incidence of respiratory disturbances reported by poultrymen, especially amongst broilers, a preliminary serological survey was carried out as to the possibility of C.R.D. being responsible.

276. Blood sera were collected from representative flocks and forwarded to Dr. John Crawley, Connaught Medical Research Laboratories, Toronto, Canada, for study.

277. The results of the survey disclosed the presence, in all cases, of P.P.L.O. H-1 antibodies, which, while not definitely diagnostic of C.R.D., are considered under field conditions, to be correlated with the presence of this virus.

278. In addition, clinical symptoms and post-mortem findings were typical of the disease. The use of Aureomycin Soluble (Lederle) in broilers where mortality was occurring, was recommended and used with a fair degree of success.

(B) *Field Trials on the suitability of Modified Live Virus Avianised Rabies Vaccine (Lederle) in farm livestock other than cattle*

279. While this vaccine has been released and accepted for use in cattle, information as to its use in horses, mules, sheep and goats is lacking. Accordingly a small trial, in collaboration with Dr. Hilary Koprowski, Assistant Director, Viral Rickettsial Research, Lederle Laboratories, was undertaken.

280. The number and classes of animals used were 6 horses, 20 mules, 20 goats and 20 sheep.

281. The animals were first bled and then injected with the vaccine, some intra-muscularly, others intra-dermally. A second bleeding was made thirty days after vaccination and these samples are being tested for antibody content.

282. The trial will be continued in 1955.

(C) *Brucellosis survey of Peasant stocks*

The incidence of brucellosis has always been low but as tests in the past were largely restricted to Government Stock a survey amongst peasant stock was commenced towards the end of the year.

A total of 305 cattle in County St. George were "screened" by the ring test followed by plate and/or tube agglutination tests in the case of reactors. A summary of serological tests carried out with *Brucella abortus* antigen over the past five years is presented below:—

| Year | Ownership               | CATTLE |                    |      | *GOATS |                    |     | BUFFALOES |                    |   | PIGS |                    |   |
|------|-------------------------|--------|--------------------|------|--------|--------------------|-----|-----------|--------------------|---|------|--------------------|---|
|      |                         | No.    | Re-<br>ac-<br>tors | %    | No.    | Re-<br>ac-<br>tors | %   | No.       | Re-<br>ac-<br>tors | % | No.  | Re-<br>ac-<br>tors | % |
| 1950 | Gov't Farm Trinidad     | 246    | 1                  | 0.37 | 55     | 1                  | 1.8 | 4         | —                  | — | 1    | —                  | — |
|      | Private ... ..          | 49     | 1                  | 2.0  | 4      | —                  | —   | —         | —                  | — | —    | —                  | — |
| 1951 | Gov't Farm, Trinidad    | 76     | —                  | —    | —      | —                  | —   | —         | —                  | — | —    | —                  | — |
|      | Gov't Farm, Tobago...   | 77     | —                  | —    | —      | —                  | —   | —         | —                  | — | —    | —                  | — |
|      | Private ... ..          | 70     | —                  | —    | —      | —                  | —   | —         | —                  | — | —    | —                  | — |
| 1952 | Gov't Farm, Trinidad    | —      | —                  | —    | 45     | —                  | —   | —         | —                  | — | 18   | —                  | — |
|      | Private ... ..          | 12     | —                  | —    | —      | —                  | —   | —         | —                  | — | —    | —                  | — |
| 1953 | Cent. Expt. Station ... | 58     | —                  | —    | —      | —                  | —   | —         | —                  | — | —    | —                  | — |
| 1954 | Cent. Expt. Station ... | 94     | —                  | —    | —      | —                  | —   | —         | —                  | — | —    | —                  | — |
|      | Private ... ..          | 358†   | —                  | —    | —      | —                  | —   | —         | —                  | — | —    | —                  | — |
|      | TOTAL ... ..            | 1058   | 2                  | 0.20 | 118    | 1                  | 0.8 | 4         | —                  | — | 19   | —                  | — |

\* Tested with *Brucella abortus* as well as *Brucella melitensis* antigens.

† Of these, 305 animals were "screened" by the ring test followed by the rapid plate and/or tube agglutination tests in the case of reactors. Five animals which were in pooled milk samples giving two (++) positive reactions by the milk ring test could not be bled for various reasons; of the 14 others which gave similar reactions and which were bled, one was doubtful and two positive in the 1:25 dilution and the remainder negative.

#### (D) *Parasitology*

A detailed study of the parasites of small domesticated ruminants at the Tobago Farm was commenced. The following parasites, not all speciated as yet, have been recovered:—

##### *Internal Parasites*

|               |     |     |                                    |
|---------------|-----|-----|------------------------------------|
| Tapeworm      | ... | ... | <i>Moniezia</i> sp.                |
| Fluke         | ... | ... | <i>Paramphistomum</i> sp.          |
| Stomach worm  | ... | ... | <i>Haemonchus contortus</i>        |
| Lung Worm     |     |     |                                    |
| Whip worm     | ... | ... | <i>Trichuris globulosa</i>         |
| Modular worm  | ... | ... | <i>Oesophagostomum columbianum</i> |
| Tracheal worm |     |     |                                    |
| Coccidia      | ... | ... | Two spp.                           |

##### *External parasites*

|         |     |     |                      |
|---------|-----|-----|----------------------|
| Tick(s) |     |     |                      |
| Earmite |     |     |                      |
| Louse   | ... | ... | <i>Bovicola ovis</i> |
| Louse   |     |     |                      |

The tracheal worms, the sexes of which are in perpetual copulation, were found in all specimen examined and in one instance in very large numbers.

Incidental examinations yielded *Bunostomum* Sp., lung worms and *Eimeria zurnii* from cattle and ova of *Hyostrogylus rubidus* and *Physoccephalus sexalatus* from pig stools.

#### (E) *Observation on the immunological value of Modified Live Virus (Avianised) Rabies Vaccine (Lederle) against Paralytic Rabies in Cattle*

This experiment which was described at paragraphs 214 to 216 of the 1954 Annual Report, yielded no results as all of the animals, for some unknown reason, failed to sicken with rabies.

#### (F) *Trials to determine the value of Rumen ingesta inoculations in hand-fed calves as reflected in weight gains*

A further experiment was conducted with a view to confirming the findings of the previous experiment reported at paragraphs 221 to 225 of the 1954 Annual Report. However, the results of the second experiment conflicted somewhat with those of the former and no definite conclusions can be drawn.

### ANIMAL HUSBANDRY

#### *Livestock Shows*

283. The following livestock shows were held during the year:—

- (i) Seven Cane Farmers' and Peasants' Shows;
- (ii) The Tobago District Agricultural Show; and
- (iii) The joint show sponsored by the Trinidad Poultry Association, the Trinidad Goat Society and the Beekeepers' Association.

284. At these shows representative animals from the Stock Farms were exhibited and improved methods of husbandry were demonstrated. In addition, the several Veterinary Officers and Livestock Inspectors assisted in judging the exhibits.

285. In view of the concurrent outbreak of Paralytic Rabies with the holding of the Cane Farmers' and Peasants' Shows a photographic display of the several features of this disease was presented. In addition, facilities for the protective vaccination of all susceptible animals, at the shows, were provided.

#### *Breed Improvement*

286. Table XX gives details of the services by selected sires to privately-owned female livestock at the Stock Farms and at the District Breeding Units in Trinidad and Tobago.

287. The services of selected sires to Departmental female livestock on Stock Farms, District Stations and Breeding Units are not included in Table XX, nor are those of seven pure-bred Sahiwal bulls which were made available in Tobago on approved estates.

288. Routine sales of young bulls, bull calves, pigs, poultry, eggs for hatching and eating, culls and undesirable types of livestock continued as in 1953.

289. Two auction sales were also held. At the first sale, bulls and bull calves, horsekind, goats and pigs were offered. At the second sale, in addition to animals of the above classes, the sale of heifers and heifer calves was resumed. This practice had been suspended since 1951 in an effort to conserve and increase the number of breeding female cattle. 48 in all were sold of which 18 were heifers and heifer calves.

290. The policy of exchanging pure bred for scrub cockerels, principally amongst peasant owners, continued. 289 Rhode Island Red and 140 White Leghorn cockerels were exchanged as compared to 149 and 69 White Leghorn in 1953.

291. The following number and classes of livestock were imported by the Department for improved breeding:—

#### *Cattle*

- (a) One pure-bred registered Zebu bull from Jamaica. This bull heads the Zebu herd at the St. Joseph Stock Farm.
- (b) Thirty grade Zebu heifers from Jamaica. These heifers were imported to increase the number of breeding females in the Department's herds with a view to increasing the number or progeny available for sale to the public.



### *Horsekind*

Two in-foal American Mammoth Janets—United States of America.

### *Poultry*

Fifty-six (56) pedigree Rhode Island Red day-old chicks—Canada.

Fifty-two (52) pedigree White Leghorn day-old chicks—Canada.

292. The following numbers and classes of livestock for breeding purposes were exported from the Stock Farms.

### *Cattle*

1 Pure Bred Zebu Bull—Department of Agriculture, Montserrat.

1 Grade Sahiwal Bull—Department of Agriculture, Montserrat.

1 Pure Bred Sahiwal Bull—Private breeder, St. Lucia.

### *Pigs*

Eight (8) large Black Piglets—Department of Agriculture, Montserrat.

### *Goats*

Two (2) Pure Bred British Alpine Bucks—Department of Agriculture, Aruba.

### *Artificial Insemination Service (cattle)*

293. The Department was very fortunate in securing the services of Mr. D. R. Melrose, B.Sc., M.R.C.V.S., of the Reading Cattle Breeding Centre, United Kingdom, to advise on the organisation of such a service. During his visit Mr. Melrose gave a course of instruction to the Veterinary Officer, St. Joseph Farm, inseminators and Laboratory staff in the several techniques involved.

294. It was considered expedient to initiate the service on a small scale and to extend it in proportion to the response shown by cattle owners. Accordingly, the service was first started, in March, at the St. Joseph Stock Farm and then extended to the Breeding Unit attached to the Farm.

295. During the first six months of operation at the Breeding Unit, cattle owners were given the option of a free insemination or a paid natural service. For a subsequent three month period, all the bulls were withdrawn and only inseminations carried out, free of charge. As from January, 1955, the same charge as for natural service will be made.

296. The response has been most favourable and increased popularity has resulted with the birth of the first calves during November/December, 1954.

297. At the Breeding Unit, one hundred and seventy-six (176) cows and heifers were inseminated. In view of the diversified ownership and distribution of these animals, it is not possible, at this juncture, to present the conception rate, but it is hoped that accurate data will be collected when calving results are determined.

298. In addition, forty-one (41) cows were inseminated in districts in close proximity to the Farm.

299. At the Farm, one hundred and seven (107) cows were inseminated of which 90 (87 per cent.) are known to be pregnant.

300. The monthly conception rates at the Farm are shown in Table XXII. The low rates in March/April were attributable to the poor semen quality of two young bulls. With the replacement of these and improvement in techniques, there has been a steady improvement in the rate of conception to a figure which is considered normal.

301. In view of the favourable acceptance of the service as well as the value of the liaison established between cattle owners and the Department, provision has been made in 1955 to extend the service to a second Breeding Unit as well as to operate a travelling unit to cover a radius of ten miles from the St. Joseph Stock Farm.

#### STOCK FARMS

302. In view of the development of the cattle-breeding unit at the Central Experiment Station, Centeno, this unit has now been classified as an additional Stock Farm. This brings the number to three.

303. The comparative total animal strength for the years 1953 and 1954 is given in Table XXIII.

#### *Cattle*

304. The breeding policy for the three Farms is as follows :—

(1) *St. Joseph Stock Farm*

- (a) the grading of pure-bred Zebu cows to pure-bred Holstein bulls.
- (b) the inter-se breeding of  $\frac{1}{2}$  and  $\frac{3}{4}$  Holstein-Zebu grades.
- (c) the maintenance of a pure-bred Zebu herd.

(2) *Tobago Stock Farm*

The breeding of pure-bred and high-grade Sahiwal cattle.

(3) *Centeno Farm*

- (a) The breeding of grade Holstein-Zebu cattle for sale to cattle owners.
- (b) The maintenance of a Water Buffalo herd.

305. No major changes were made in the system of management other than :—

- (a) the increased amount of milk being fed and the extension of milk feeding to calves up to six months of age; and
- (b) the application of artificial insemination, as a routine practice, at the St. Joseph Farm.

306. As citrus pulp meal became available this was included in the dairy ration. A limited trial is also being made with this feed for raising steers.

307. Routine disease control measures were maintained. It is very gratifying to record that for the second successive year there were no reactors to the tuberculin test at the St. Joseph, the Tobago or the Centeno Farms.

308. The development of cattle breeding at the Centeno Farm was continued. A definite breeding programme was laid down, the main objective being the production of an increased number of dairy type animals, mainly heifers, and water buffalo, of both sexes, for sale to the public.

309. A very severe setback was sustained in the development of the water buffalo herd of fourteen heifers and one bull. Eleven heifers and the bull died within the space of four days. The cause of death was suspected to be due to plant poisoning.

310. The animals were confined in a twenty-five acre paddock which was subjected to flooding over a period of three days when the adjoining river overflowed its banks.

311. As a result of this flooding the available grazing was reduced to a minimum and in spite of a daily delivery of cut fodder, during the period of flood, there was presumptive evidence of the animals having cropped the leaves and stems of the plant *Asclepia curasavica* which was above the water level. This plant is reputed to be poisonous to stock but is usually avoided under normal conditions.

312. An interim report from the Government Chemist states that the plant contained substances which gave reactions characteristic of glycosides and alkaloids respectively. It was not possible to identify any of the substances. Extracts from organs of the dead buffalo gave glycosidal and alkaloidal reactions sufficiently similar to the extracts from the plant to make it almost certain that the buffalo had been eating of this plant.

313. In view of the fact of the reputed toxic properties of *Asclepia curasavica* and the confirmed similar properties of related species of *Asclepia*, it would seem most reasonable to suspect this plant as being responsible for the death of the buffaloes. However, further investigation is being carried out.

314. The total cattle strength at the Stock Farms is given in Table XXIV and the total number of calves born is given in Table XXV.

#### *Milk Production*

315. The emphasis on milk production is centred on the dairy herd at the St. Joseph Stock Farm and is not considered as a major objective at either of the other two farms.

316. The total milk production amounted to 74,936 gallons, 58,423 gallons at the St. Joseph Stock Farm; 2,919 gallons at the Tobago Farm and 13,594 gallons at the Centeno Farm. This figure represents an increase of 2,461 gallons over the previous year.

317. The sale of milk consisting of farm production, surplus to that required for calf feeding, supplemented by purchases processed for resale, amounted to 77,677 gallons. This milk was distributed amongst hospitals, schools and other institutions. This figure represents a decrease of 2,226 gallons over the previous year. This decrease was mainly due to increased milk feeding of calves.

318. Table XXVI shows the comparative St. Joseph Stock Farm production for the years 1950-1954.

319. While there is an increase over 1953 production, it should be noted that the average number of cows milked was increased by six. However, yields were considered as satisfactory in view of :—

- (a) reduced grazing facilities caused by the increased numbers of the herd;
- (b) the failure of some pastures to recover following the dry season; and
- (c) the non-culling of low producers in a drive to maintain a full complement of breeding females.

320. The records of twenty-four (24) first-calf heifers are not yet complete, but performance, so far, is in the majority of cases, comparable to previous years.

#### *Horsekind*

321. The breeding policy for this class of livestock, which is confined to the St. Joseph and Tobago Stock Farms is as follows :—

- (1) The production of a general type of utility horse suitable for riding, light draft, and for the provision of a better type of mare for mule breeding;
- (2) the breeding of light draft mules;
- (3) the provision of selected jacks for mule and donkey breeding; and
- (4) the stationing of a thoroughbred stallion as long as the present animal is suitable for service.

322. The use of the light draft stallions still continues to be disappointing. However, some promising progeny out of selected and imported mares is being offered for sale as available, and it is hoped, by this means, to stimulate a gradual demand for this type of animal.

323. Both farms produced a very useful type of light draft mule suitable for use on cocoa estates and by cane farmers. These mules were sold at auction, and realised very favourable prices.

324. The total strength of the Stock Farms at the end of the year is shown in Table XXVII.



### *Pigs*

325. The units at the two farms were maintained and there has been no change other than in the management.

326. At both farms, the units comprise solely animals retained from the 1953 importations of Large Blacks and Berkshires from the United Kingdom and their locally-born progeny.

327. Following a change in the system of management with increased feeding, a marked improvement was effected especially amongst the piglets which had been causing some concern over their low weights, gains and general lack of condition.

328. The total number of pigs born at the two farms was seven hundred and ninety-one (791)—six hundred and thirty-four (634) Large Black and one hundred and fifty-seven (157) Berkshire. The average litter size in the Large Black was eight (8) and seven (7) in the Berkshire. The sex distribution was four hundred and twenty-four (424) boars and three hundred and sixty-seven (367) gilts.

### *Goats*

329. The maintenance of the two units at the St. Joseph and Tobago Farms continued. The two breeds kept are the British Alpine and the Anglo-Nubian.

330. With one exception, an Anglo Nubian goatling which, so far, has not conceived, the performance of the 1953 imported stock from the United Kingdom has been very satisfactory.

331. During the year, seventy-seven kids were born and eighteen pure-bred British Alpine; five grade British Alpine; seventeen pure-bred Anglo-Nubian and thirty-seven grade Anglo-Nubian.

332. By a decrease in number and a change in management, it was possible to improve the standard of condition in the unit at the Tobago Farm and to reduce to a minimum the losses due to parasitism.

333. There was a keen demand for goats offered in the two auction sales and fair prices were realised.

334. The total goat strength at the end of the year is shown in Table XXIX.

### *Sheep*

335. The unit at the Tobago Farm was maintained with the breeding policy unchanged, namely the gradual establishment of a flock graded to the Barbados Black Belly breed.

336. There has been a reduction in the numbers kept at the Farm, and distributions of breeding stock have been made to one Demonstration Station and one Breeding Unit in Tobago.

337. It is very gratifying to record that there has been considerable improvement in the quality of the flock. This is attributable chiefly to control of parasites by the reduction in numbers and the increased use of rotational grazing.

338. Another encouraging feature was the release of breeding stock for sale to the public in Tobago.

339. The total sheep strength at the end of the year was 102 head, composed of 8 rams, 71 ewes, 3 ram lambs, 20 ewe lambs.

### *Poultry*

340. There was no change in either of the two breeds maintained or of the breeding policy.

341. The units continued to maintain a satisfactory status of fertility, hatchability and health. There was an improvement in egg production in the White Leghorn unit while there was a slight reduction in the Rhode Island Red. Total egg production was 44,189 eggs.

342. At the St. Joseph Farm where most of the hatching operations are carried out, an overall percentage of 63.5 hatchability was obtained. A total number of 3,180 chicks of both breeds were hatched at the two farms.

343. Importations comprised 104 sexed males—56 Rhode Island Red and 52 White Leghorns from Canada. These were required for replacements.

344. The duck unit was satisfactorily maintained and the demand for ducks continued. A total number of 115 drakes, ducks and ducklings were sold.

345. During 1955, it is proposed to expand and develop the poultry units, principally at the St. Joseph Farm. This expansion is to take the form of the production of increased numbers of cockerels for exchange. Experimental trials in broilers production are also to be carried out.

346. The total poultry strength at the end of the year is shown in Table XXX.

### *Rabbits*

347. Small units of Flemish Giants were maintained at the St. Joseph and Tobago Farms. The demand for this stock appears to be on the decline and only twenty-three rabbits were sold during the year.

### *Pasturage, Fences, Crops, Buildings, Irrigation, &c.*

348. Maximum use was made of pasturage in animal feeding, particularly cattle, at the three Farms. Pastures in general received a setback due to dry weather conditions and of the maintenance of the increased cattle population.

349. In addition to the maintenance of established fields, one hundred and sixteen acres of Elephant Grass were planted. Small observation and multiplication plots of Pangola (*Digitaria procumbens*) and Lukuntu (*Ischmaecm timorens*) grass were also planted.

350. The routine maintenance of fences continued, while two new areas, approximately sixteen acres, were fenced. Increased use of electric fencing in grazing control is being made with satisfactory results.

351. The production of dried shelled corn amounted to 82,355 lb. which was used as animal feed.

352. Two new buildings were erected, the milk processing plant at the St. Joseph Farm and the milk room at the Centeno Farm. The former building houses the new dairy equipment including pasteurisers, cooler, bottling machine, cold room, compressors and boiler. The old office building at St. Joseph was renovated and adapted for use as an incubator room and brooding house for poultry. The former gasoline storage room was demolished and replaced with a new building to allow for increased storage and installation of a gasoline pump.

353. Minor works included remodelling of the former Trinidad Government Railway garage at the Tobago Farm to accommodate livestock; surfacing of the yards, the general improvement of drainage and repairs to the dairy building and piggery at this farm were also effected.

354. At the Centeno Farm, improvements in the water supply included the construction of a pump house, the provision of additional water storage tanks (25,400 gallon capacity) and the laying of approximately 400 yards of two inch piping.

355. Provision has been made in the 1955 Estimates to carry out irrigation trials at the St. Joseph and Tobago Farms.

#### *Revenue of the Stock Farms*

356. The total revenue of the three Farms is given in Table XXXI.

### LAND SETTLEMENT

#### *Development of New Areas*

357. The development of Land Settlements with funds provided under the Colonial Development and Welfare Schemes as part of the present Five-Year Programme continues.

358. Work on five of these was started in 1953 and was begun on three more in 1954. The construction of roads surfaced 8 feet wide to give access to building sites and 4½ feet wide to give access to agricultural holdings, the erection of buildings to house the resident staff, the laying on of potable water, the clearing of Reserves and natural water courses and the planting of tree crops received attention.

359. Field officers are now housed at Louis d'Or, Tobago, and on the Central Farms at El Recuerdo, Rio Claro and Gordon Miller. A total of twenty-five acres of clonal cacao and four acres of coffee were planted and cared for, another 35 acres are shaded for planting in 1955 while many more acres have been cleared and shading for planting tree crops on these Farms continues.

360. The Survey Department has now completed surveys of building lots and agricultural holdings at Louis d'Or, Tobago, and Gordon Miller, and surveys are now in progress at Rio Claro, El Recuerdo and St. Helena.

361. Development work on the Bamboo Grove No. 2 Land Settlement has been almost completed and 102 tenants were selected. Of these 79 have signed agreements and were put into occupation. At Louis d'Or and Gordon Miller selections have been completed and it is hoped that tenants will occupy their holdings early in 1955.

### *Maintenance of Established Settlements*

#### *Tenancies*

362. On the old established settlements there was steady demand for allotments on the outskirts of commercial areas as they afforded building land and in some cases housing at cheap rates. 93 tenancies were terminated during the year. All of these holdings were retenanted and 84 new tenancies were created.

#### *Agricultural Development*

363. The most outstanding development was the demand for cocoa clones and improved varieties of citrus, on the settlements with permanent crops. Cocoa fields were fairly well maintained. On the other settlements cultivation was spasmodic and had some direct relation to weather conditions. Rice and garden vegetables were the main crops in the low lands while food crops formed the main cultivation on the higher land. Holdings on four settlements suffered damage as a result of floods following heavy rains.

#### *Housing*

364. The trend towards improvement in the type of settlers' houses continued. Clay blocks, concrete and wood are gradually replacing mud and wattle as building materials. Building according to a specified and approved plan is now becoming the rule rather than the exception that it was in the past.

365. Some of the houses owned by settlers as well as a few of those owned by Government were damaged by an earthquake late in the year.

#### *Social and Co-operative Development*

366. In addition to the social and co-operative activities on the settlements more interest is being shown in the religious life of settlers, and efforts are being made to establish places of worship on some settlements.



367. Improvement in the social life is reflected in the number of Clubs and Welfare Organisations which are being formed with the assistance of the Education authorities and the Departments staff.

368. Co-operative and Agricultural Credit Societies continue to increase in size and number.

#### *Revenue*

369. The sum of \$22,850.53 was earned during the year. This consisted of sales of produce and royalties from produce on Reserves.

### FISHERIES DIVISION

370. During the year there were no new appointments to the Fisheries Division. Wholetime staff consisted of the Fishery Officer, the Fish Culturist, one Fishery Assistant, three junior clerical staff and a caretaker and one labourer at Bamboo Grove Station.

371. In March, Dr. C. F. Hickling, the Fishery Adviser to the Secretary of State, visited Trinidad in order to observe progress on the projects he had initiated at the end of 1953, and to offer further advice.

372. From May to October Mr. J. L. Price, a graduate of Toronto University, was engaged temporarily to make a survey of the fresh water fish fauna.

373. The Standing Advisory Committee on Fisheries which advises the Honourable Minister of Agriculture and Lands on general policy, met monthly under the chairmanship of the Director of Agriculture.

374. Although nothing spectacular was achieved during the year, the general pattern of fishery developments is now agreed upon, and some progress has been made in all the activities so far undertaken.

#### *Improvements to Fishing Beaches*

375. The outstanding need for the whole of Trinidad is a modern fishing centre at Port-of-Spain, as Port-of-Spain fish market is the hub of the fishing industry of the whole of Trinidad, and no attempt to up-grade the industry as a whole can succeed until Port-of-Spain has a modern and sanitary fishing centre.

376. During the year, therefore, the fisheries staff in collaboration with the Fishery Adviser to the Secretary of State prepared detailed proposals for such a fishing centre. By the end of the year, these proposals had been approved by the Standing Advisory Committee on Fisheries, and had been placed before the Honourable Minister of Agriculture and Lands, and by him before the Port-of-Spain City Council.

377. The funds voted for beach improvements for 1954 were allocated to Carenage and Port-of-Spain. At Carenage, the structures erected in 1952 had proved unacceptable to the fishermen, so they were modified in accordance with a plan arrived at in consultation with local fishing interests. At Port-of-Spain a boat shed vacated by the Police was repaired and modified for the use of the fishermen for repairing their boats.

### *Investigations*

378. The Fisheries Division has as yet no boat of its own, but a 28-ft. aluminium alloy diesel-engined surf-type fishing boat has been ordered on the advice of the Fishery Adviser to the Secretary of State.

379. From February until the end of the year, the Fishery Assistant organised and conducted a survey of the pot fishing prospects off Matelot on the north coast, in partnership with local fishermen. Results indicate that fish pots, until then unknown to the local fishermen, would be commercially practicable there.

380. A small experimental fish weir was erected under the supervision of the Fishery Adviser to the Secretary of State at Cocorite, three miles west of Port-of-Spain, at the end of 1953. It was fished until the beginning of June, by which time the wire netting had perished. Results were not as good as had been hoped, but some valuable information was obtained, and there is good reason to believe that a larger weir on better ground would be a commercial success. A commercial fishing proprietor intends to construct one in due course.

### *Statistical Data*

381. During the second half of the year, details of fish handled at Port-of-Spain Wholesale Market was collected for the Fisheries Division by the Market Clerk by arrangement with the City Council. These details are shown in Table XXXII.

The system worked very satisfactorily and it is hoped to extend it to other markets. Total figures for Port-of-Spain, San Fernando and Sangre Grande, were obtained from the Fish Markets there for the whole of the year. These figures are shown in Table XXXIII. Details of Imports of cured fish were obtained from the Department of Industry & Commerce and are shown in Table XXXIV.

### *Commercial Fishing Activities*

382. The 70-ft. trawler *Suffolk Rose* was wrecked on the North Coast in January. This ended her operations, but it is doubtful whether she could ever have succeeded commercially owing to lack of capital.

383. A 60-ft. motor yacht was purchased by a local fishing concern, and converted into a fish carrier by fitting insulated holds. She also had a small trawl winch installed. She is intended to act as a mother ship to a fleet of pirogues and to be capable of experimental trawling for fish and shrimps. She was not in operation by the end of the year.

384. Construction of a 50-ft. motor fishing craft for a Trinidad owner, in which he intends to fish deep sea snapper, is held up by lack of funds.

385. By the end of the year, five pirogues powered by small diesel engines were operating shrimp trawls in the in-shore waters of the Gulf of Paria. No one has yet attempted to shrimp in more than two or three fathoms and no capstans have yet been installed.

386. The Fisheries Division had a modified 21-ft. pirogue built in an attempt to develop a boat with better beaching qualities than existing pirogues. She had not undergone full trials by the end of the year.

#### *Pond Culture of Fish and Fresh Water Fisheries*

387. Results were disappointing, as further flooding of the St. Joseph River obliterated the whole programme of experiments at Bamboo Grove Station. This was particularly unfortunate, as a very comprehensive programme of research had been planned in collaboration with the Fishery Adviser to the Secretary of State.

388. However, despite the inability of Government to provide detailed advice on how best to grow *Tilapia mossambica* to a commercial size, a most encouraging interest has been shown by a number of small farmers in fish culture. One of these has already built 6 acres of fish ponds, which were stocked from Bamboo Grove in June.

389. Mr. J. L. Price, a graduate of Toronto University, with experience in fresh water fisheries research work, was appointed temporarily to make a collection of native species, and to report on their abundance, distribution, habitats and uses, with special reference to the aquarium trade and its effect on the fish population.

### MARKETING DIVISION

#### *Local Market Conditions and Supplies*

390. The volume of local ground provisions reaching markets was, on the whole, not as abundant as in the previous year. Nevertheless, the considerable increase in importations from other West Indian territories helped to keep the markets fairly balanced. The supply of green vegetables during the season was good but the quality of a large proportion of the tomatoes offered in markets was poor. A fair crop of pigeon peas was harvested and assisted in keeping the markets in Trinidad satisfactorily supplied.

#### *Purchases of Local Produce*

391. The quantities of produce purchased by the Marketing Board in 1954 were substantially less than in the previous year. Unfavourable weather conditions again limited the corn crop severely, with the result that 1,390 tons had to be imported to keep the market supplied. Comparative figures for the years 1952-1954 are given in Table XXXV.

### *Importations*

392. With the exception of tomatoes, which fell off slightly, imports of all other food crops from other British West Indian territories increased in varying degrees. Imports of sweet potatoes continued the marked upward trend, the quantity imported in 1954 being more than 40 per cent. above the level in 1953. Plantains and fruit also came in larger quantities. Comparative figures are shown in Table XXXVI.

### *Shipments from Tobago to Trinidad*

393. The quantities of produce shipped from Tobago to Trinidad fell by almost one-half. Bananas and peas increased to some extent but the increase was not sufficient to offset the decrease in plantations, ground provisions and corn. (See Table XXXVII).

### *Ground Provisions Depot*

394. The value of the purchases by this retail section of the organisation increased from \$127,254 in 1953 to \$138,735 in 1954 and the sales from \$160,573 to \$168,677. The receiving and delivery sections of this depot were extended and remodelled to provide better service to the public.

### *Seeds and Planting Material*

395. Sales of imported vegetable seeds in 1954 were better than those for the previous three years. Sales of local planting material also increased due, in a large extent, to the renewed service in providing banana planting material of the Cavendish variety. Figures for 1951-1954 are shown in Table XXXVIII.

### *Fertilizers and Insecticides*

396. The following fertilizers were offered for sale at all depots—Sulphate of Ammonia, Superphosphate, Garden Fertilizer, Muriate of Potash. Sales continued to show a marked increase. Difficulty was experienced, however, in meeting the demand for Sulphate of Ammonia. A new mixture containing 8 per cent. Nitrogen, 10 per cent. Phosphate and 20 per cent. Potash and known as "Banana Mixture" was offered for the first time as part of the campaign to grow more bananas.

397. At the request of many farmers, livestock medicines were offered for sale at all depots. Response was very satisfactory. Details of sales are shown in Table XXXIX.

### *Rice Husks*

398. The amount of this offal purchased from rice mills fell from 455 tons in 1953 to 396 tons. This was due, to a large extent, to the increasing use of the offal in this form as a feeding stuff in spite of its high fibre content. 118 tons of rice bran and 20 tons "brokens" were extracted from the offal purchased and these were used in preparing animal rations.



### *Livestock Feeds*

399. Sales of feeds reached a record level. The increase was spread over all feeds, with the exception of poultry rations. The increase in sales of pig ration was considerable, and reflected, in a large measure, the increased attention paid to the pig industry. Comparative data are given in Table XL. In addition, 621 tons of feed ingredients were sold to Government Institutions and stock owners.

### *Importation of Banana Plants and Exports of Bananas to the U.S.A.*

400. The Marketing Board undertook the importation and distribution of 125,000 banana plants on behalf of the Cocoa Board and the Department of Agriculture. Of these, 60,000 were of the Lacatan and 65,000 were of the Giant Governor variety. 81,311 bunches of Gros Michael bananas were exported to the United States of America during the year; this represented a considerable increase on the previous year's exports.

### *Developments*

#### *Export of Bananas to the United Kingdom*

401. Three trial shipments of the Cavendish variety totalling 1,838 bunches were made to the United Kingdom towards the end of the year. This followed the signing of a contract between the Marketing Board and a firm in the United Kingdom to supply all available bananas of this variety for a period of 15 years commencing from September, 1955. These shipments were designed to allow an assessment to be made of all the problems incidental to the transport and subsequent behaviour of the fruit on ripening at point of destination. Reports on the outturn were very encouraging.

#### *Dehydrated Citrus Pulp Meal*

402. The factory erected to process citrus pulp waste from the Co-operative Citrus Growers' Association into a cattle feed commenced operations during the year. About 800 short tons were manufactured and this was taken over by the Marketing Board under an agreement and offered for sale to the public. Sales were slow; by the end of the year only 240 tons had been disposed of. It is expected that, as the public grows more accustomed to this new feed, and with a reduction in the price, the volume of sales will increase.

### *Mobile Units*

403. The system whereby mobile units carry farm supplies to areas not in close proximity to depots was maintained and expanded with, in many instances, encouraging results. The new areas covered during the year under review comprised the following:—

In the North—Petit Valley, Diego Martin, Caroni, Cunupia,  
Jerningham Junction;

In the South—Breachin Castle, Couva, California, Claxton Bay, Sum  
Sum Hill, Forbes Park, Tortuga;

In the East and Centre—George Village, Tableland, Robert Village, Poole, Tabaquite, Brother's Road.

The value of this system of mobile units has been clearly demonstrated. In the Rio Claro area, for example, the average annual value of goods and services, excluding the purchase of bananas for export, rendered primary producers before this service was introduced, was about \$4,500. With its introduction, the value increased to \$15,000.

#### *Improvements to Factory at St. Joseph*

404. Reconstruction work on the factory buildings at St. Joseph to accommodate the new Hess Drier for grains was completed. The drier was installed and will be ready for use when the elevator and the conveyor system necessary for the full mechanisation of the operation of drying has been erected.

#### *Business Turnover*

405. The significant increase in the value of the services rendered producers is shown in Table XLI.

### PLANT QUARANTINE

406. The following summary provides details of the Plant Protection work carried out at the two authorised ports of entry, Port-of-Spain (by sea) and Piarco (by air).

407. Three hundred and eighty-two *Phytosanitary certificates* were issued for the *export* of cut flowers, fruit, planting material, &c., under the Plant Protection Regulations (1953).

408. Seventy-three *Permits* were issued for the *Importation* of planting material, fruit, vegetables, &c., restricted under the Plant Protection Regulations (1953).

409. "*Quantity*"\* of plants and plant products imported and inspected at Port-of-Spain :

Vegetables 143,291; Fruit 35,184; Miscellaneous Plant Material, &c., 503; Banana Suckers 31,131; Cotton 1,700; Seizures 14.

410. "*Quantity*"\* of plants and plant products imported and inspected at Piarco :

Vegetables 313; Fruits 65; Miscellaneous Plant Material 36; Seizures 43.

411. Material which was seized and destroyed under the Plant Protection Regulations (1953) included :—

#### *Port-of-Spain*

Fruit, including oranges and limes; seed corn; grass seeds; sugar-cane pieces; raw coffee and soil.

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\*Quantity means number of bags, crates, items, &c., which vary in weight from less than one pound, to two hundred pounds.

### *Piarco*

Fruit, including apples, pears, plums, peaches, golden apples, avocado pears, oranges, limes, mangoes, grapes and dates; vegetables, including tomatoes, green vegetables, corn, (seed and husk) and pigeon peas, cacao pods; sugar cane pieces; plants growing in soil; tonca beans; herbs; spice; nutmegs and wild bush.

### *Staff*

*Port-of-Spain*—Chief Fruit Inspector, Field Assistant, 3 Guards.

*Piarco*—Field Assistant.

*Supervisor*—Plant Protection Officer-Entomologist.

## PRODUCTION, SALES AND DISTRIBUTION, 1954

412. A summary of the total quantities of planting material, crops and livestock produced by the Department and disposed of to the public for planting, breeding or consumption is provided in Table XLII. This summary includes clonal cacao and fertilisers distributed by the Cocoa Board and quantities of stock feed, fertilisers and other items sold by the Marketing Board.

## LIBRARY

Considerable progress was made in the re-organisation and extension of the library of the Department. Increasing use was made of the reading room at the Central Experiment Station and of the facilities offered in respect of circulation of books and periodicals on loan.

The collection of photographs and blocks grew appreciably with the addition of several dealing with the growing of citrus fruits and vegetables.

## PUBLICATIONS

Flora of Trinidad and Tobago, Vol. II, Part V. Personales, Scrophulariaceae, Lentibulariaceae, Gesneriaceae, Bignoniaceae, Pedaliaceae, Acanthaceae. Price \$1.20 (B.W.I.)

Survey of the Rice Industry in Trinidad (Statistical Studies and Papers No. 2). A Guide to Cocoa Rehabilitation under the Cocoa Subsidy Scheme, by E. R. Moll, Chief Rehabilitation Officer, Cocoa Board.

Advice to Farmers on Rice Production, by E. G. Benson, Rice Officer, Department of Agriculture.

The Castration of Meat Animals.

The following appears as Supplements of the *Journal of the Agricultural Society of Trinidad and Tobago*:—

The Husbandry of Pigs, by F. O. Gonzalez, M.R.C.V.S., B.Sc., D.I.C.T.A. (54 : 1, 105-110).

Distribution of Planting Material, by L. C. Farrell (54 : 1, 111-113).

Peasant Farming in the British Caribbean (An address delivered to the Colonial Office Conference of Directors at Wye College, Kent, September, 1953, by C. H. B. Williams, M.A., D.I.C.T.A., A.I.C.T.A., Director of Agriculture (54 : 2, 226-236)).

St. Joseph Stock Farm : Notes on Pastures, by P. J. Dominique, M.B.E. (54 : 2, 237-240).

Avocado Propagation in Trinidad, by E. A. Tai, M.Sc., D.I.C.T.A. (53 : 4, 496-503).

The following appeared in the *Journal of the Agricultural Society of Trinidad and Tobago*:—

Marboard Citrus Pulp Meal, by L. C. Farrell (54 : 2, 161-163).

Some Tropical Fruits (An address to the Agricultural Society of Trinidad and Tobago by E. A. Tai, Agronomist, Department of Agriculture (54 : 3, 265-274)).

What is known of Paralytic Rabies, by Holman E. Williams, D.V.M., M.Sc. (54 : 3, 297-306).

The following appeared in *Parasitology*:—

Studies on the Bovine Filarid *Setaria Cervi* (Rudolphi, 1891) by H. E. Williams, D.V.M., M.Sc.

The following appeared in *Tropical Agriculture*:—

The Status of Bovine Trichomoniasis in the Colony of Trinidad and Tobago, by H. E. Williams, D.V.M., M.Sc. (31 : 4, 318-320).

#### CONFERENCES, MEETINGS, VISITS, ETC.

Mr. R. Barrie-Smith, Agricultural Officer, paid a two-week advisory visit to Montserrat between the 21st January and 5th February in connection with the cultivation of hill rice in that Island.

While on long leave in the United Kingdom, Mr. Barrie-Smith attended a course on Agricultural Extension at the University of Wageningen in the Netherlands from 12th July to 7th August.

Mr. Louis de Verteuil, Cacao Agronomist, made a survey of clonal cacao in the Caribbean area from February to June. This included visits to St. Lucia, Dominica, Grenada, St. Vincent, Surinam, Mexico, Ecuador,



Colombia and Costa Rica. The object of the survey was to familiarise himself with the work being carried on in these territories in connection with cacao selection and propagation.

At the request of the West Indian Limes Association the Citrus Agronomist, Mr. E. Tai, carried out a survey of the Eastern Caribbean Colonies between March and October and made observations on the growing of limes. He paid visits to Dominica, St. Lucia, St. Vincent, Carriacou and British Guiana. The preparation of a report is now under way.

Dr. L. R. Hutson, Deputy Director of Agriculture (Animal Husbandry) attended the South-eastern United States Rabies Conference sponsored by the Conference of Public Health Veterinarians, Veterinary Public Health Section, the Communicable Diseases Centre Public Health Service and the Florida State Board of Health. This conference was held in Tampa, Florida, United States of America, on 19th-20th March, 1954.

In August Dr. Hutson accompanied the Honourable Acting Minister of Agriculture and Lands to the United States of America in connection with Rabies Control.

Messrs. Louis de Verteuil, Cacao Agronomist, and E. R. Moll, Chief Rehabilitation Officer, attended the fifth meeting of the Inter-American Technical Cacao Committee, held from 4th to 10th July at the Inter-American Institute of Agricultural Sciences at Turrialba, Costa Rica.

Mr. L. Johnson, Economic Botanist, while on long leave attended the International Botanical Congress in Paris from 2nd to 14th July.

Mr. C. Holman B. Williams, Director of Agriculture, visited Jamaica from 4th to 17th August to attend the Agricultural Extension Centre held under the auspices of the Food and Agriculture Organisation of the United Nations, UNESCO the Caribbean Commission and the Inter-American Institute of Agricultural Sciences. The Centre was attended by delegates from the United States of America, Mexico, Costa Rica and the Caribbean Republics and Territories.

Mr. Williams also attended the twenty-first meeting of the Advisory Committee of the British West Indies Central Sugar Cane Breeding Station, which was held in Barbados from the 13th to 14th September.

Advisory visits were made by Dr. Hutson at the request of the British Guiana Government to advise on a suspected outbreak of Newcastle Disease and by Dr. H. E. Williams, Veterinary Investigations Officer, to Grenada to advise on a suspected outbreak of Anthrax in cattle and to British Guiana to assist in control measures initiated as a result of the presence of Foot and Mouth Disease on the Brazilian-British Guiana border.

Mr. D. M. Hanschell, Sugar Agronomist, at the request of the Grenada Government, visited Grenada from 25th to 28th August to advise on the planning and siting of a series of sugar cane field trials.

Mr. C. Holman B. Williams, Director of Agriculture, Mr. E. S. Capstick, Deputy Director of Agriculture (Crop Husbandry) and Mr. St.G. Cooper, Senior Agricultural Officer, attended the Joint Conference on Education and Small Scale Farming in Relation to Community Development which was held in Trinidad from 6th to 15th October. This conference was convened under the sponsorship of the United Nations Educational, Scientific and Cultural Organisation and the Caribbean Commission.

Dr. Hutson was awarded a Fellowship by the Pan-American Sanitary Bureau to attend a seminar course on Foot and Mouth Disease sponsored by the Pan-American Foot and Mouth Disease Centre. This course was held in Panama City on 8th-19th November, 1954.

The first convention of the British Caribbean Veterinary Association (Trinidad Branch) was held in Trinidad on 24th-29th May. The several Veterinary Officers attended the meeting and took active part in the discussions and clinical sessions.

The Director of Agriculture attended the 1954 meeting of the British West Indies Sugar Technologists which was held from 22nd to 26th November, 1954, inclusive. Also attending this meeting were Messrs. D. M. Hanschell, J. A. Spence, G. Stell, L. Johnson and L. G. Campbell.

LEGISLATION

|                                                                             | Date                    | References                                                                                                                                     | Remarks                                                                                                                   |
|-----------------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <i>Agricultural Credit Societies</i><br>Ordinance No. 6—1954                | ... 12th March, 1954    | ... Agricultural Credit Societies Ordinance, 1954                                                                                              | An Ordinance to make better provision for Agricultural Credit Societies.                                                  |
| Gazette Notice No. 692. Agricultural Credit Bank.                           | ... 29th April, 1954    | ... Agricultural Credit Bank, Ordinance, Ch. 23, No. 5.                                                                                        | Appointment of Mr. J. A. McDonald to act as member.                                                                       |
| Gazette Notice No. 780. Agricultural Rent Board—Eastern Counties            | ... 13th May, 1954      | ... Rents of Small Agricultural Holdings Ordinance, Ch. 23, No. 20 (Section 3).                                                                | Appointments to Agricultural Rent Board—Eastern Counties—Messrs. R. Lathuillier and H. Redman.                            |
| Gazette Notice No. 1171. Agricultural Rent Board—Tobago.                    | ... 8th July, 1954      | ... Rents of Small Agricultural Holdings Ordinance, Ch. 23, No. 20 (Section 3).                                                                | Appointment of Mr. N. M. Hassanali as Chairman and Mr. L. A. Cordner as Secretary.                                        |
| Gazette Notice No. 191. The Agricultural Credit Societies Ordinance, 1954   | ... 15th December, 1954 | ... The Agricultural Credit Societies Ordinance, 1954                                                                                          | Regulations made by the Governor-in-Council under Section 73 of the Agricultural Credit Societies Ordinance, 1954.        |
| <i>Cocoa</i><br>Ordinance No. 13—1954. Cocoa Industry (Amendment) Ordinance | ... 19th March, 1954    | ... Cocoa Industry Ordinance, Ch. 23, No. 16                                                                                                   | An Ordinance to amend the Cocoa Industry Ordinance, Ch. 23, No. 16.                                                       |
| Ordinance No. 27—1954. Cocoa Subsidy (Special Taxation) Ordinance           | ... 21st May, 1954      | ... Cocoa Subsidy Ordinance, 1954—(Special Taxation)                                                                                           | An Ordinance to effect the repeal of certain provisions of the Cocoa Subsidy (Special Taxation) Ordinance, Ch. 33, No. 9. |
| Ordinance No. 24—1954. Exportation of Cocoa (Amendment) Ordinance, 1954     | ... 5th May, 1954       | ... Exportation of Cocoa Ordinance, Ch. 23, No. 21                                                                                             | An Ordinance to amend the Exportation of Cocoa Ordinance, Ch. 23, No. 21.                                                 |
| Gazette Notice No. 1393. Cocoa Pool                                         | ... 9th August, 1954    | ... Exportation of Cocoa Ordinance, Ch. 23, No. 21 as amended by Section 2 of the Exportation of Cocoa (Amendment) Ordinance, No. 24 of 1954   | Cocoa Pool—Distribution for the period 1st January, 1954 to 31st August, 1954.                                            |
| Gazette Notice No. 1394. Cocoa Pool                                         | ... 9th August, 1954    | ... Exportation of Cocoa Ordinance, Ch. 23, No. 21 as amended by Section (2) of the Exportation of Cocoa (Amendment) Ordinance, No. 24 of 1954 | Cocoa Pool 1954—Fixing of Period.                                                                                         |

LEGISLATION—CONTINUED

|                                                                                               | Date               | References                                                                       | Remarks                                                                                                                            |
|-----------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Gazette Notice No. 1394. Cocoa Exporters' Committee                                           | 26th August, 1954  | ... Exportation of Cocoa Ordinance, Ch. 23. No. 21 (Laws, 1951-53)               | Period of time given during which cocoa should be sold to licensed exporters.                                                      |
| Gazette Notice No. 1703. Cocoa Exporters' Committee                                           | 7th October, 1954  | ... Exportation of Cocoa Ordinance, Ch. 23. No. 21 (Laws, 1951-53)               | Period of time given during which cocoa should be sold to licensed exporters.                                                      |
| <i>Food Crops</i>                                                                             |                    |                                                                                  |                                                                                                                                    |
| Gazette Notice No. 1208. Guarantee to purchase certain food crops                             | 5th July, 1954     | ... — — —                                                                        | ... Guarantee to purchase certain food crops due to expire on 30th June, 1954, extended for a further period of 12 months.         |
| <i>Sugarcane</i>                                                                              |                    |                                                                                  |                                                                                                                                    |
| Government Notice No. 18. Sugar Quotas Order, 1954.                                           | 26th January, 1954 | ... Sugar Quotas Ordinance, Ch. 23. No. 13                                       | Sugar Quotas for various estates given.                                                                                            |
| Gazette Notice No. 1391. Sugar Industry Rehabilitation and Price Stabilisation Fund Committee | 12th August, 1954  | ... Sugar Industry (Special Funds) Ordinance, No. 12 of 1948                     | Appointment of Mr. B. Andrews to committee.                                                                                        |
| Gazette Notice No. 1392. Sugar Industry Rehabilitation and Price Stabilisation Fund Committee | 12th August, 1954  | ... Sugar Industry (Special Funds) Ordinance, No. 12 of 1948                     | Appointment of Mr. R. Spink to committee.                                                                                          |
| Gazette Notice No. 1421. Sugar Industry Labour Welfare Fund                                   | 19th August, 1954  | ... Regulation 7(2) of the Sugar Industry (Labour Welfare Committee) Regulations | Appointment of Mr. D. Andrews to committee.                                                                                        |
| Gazette Notice No. 1698. Sugar Industry Wages Council                                         | 7th October, 1954  | ... Wages Council Ordinance, Ch. 22. No. 16                                      | Appointment of persons to serve as members of the Sugar Industry Wages Council for the period 1st August, 1954 to 31st July, 1955. |



|                                                                                                                          | Date                     | References                                                                   | Remarks                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Sugarcane—Continued</i><br>Government Notice No. 153. Pro-<br>duction of Cane (Requisition of<br>Returns) Order, 1954 | 30th September, 1954 ... | Production of Cane Ordinance, Ch. 23.<br>No. 12. Subsection (7) of Section 9 | Requisition of returns to be submitted on<br>prescribed form.                                                                                                                                                                                                                |
| Government Notice No. 164. Sugar<br>Industry (Price Stabilisation<br>Fund) Regulations, 1954                             | 26th October, 1954 ...   | Sugar Industry Special Funds Ordinance,<br>Ch. 23. No. 14                    | Regulations made by the committee appoin-<br>ted to control and administer the sugar<br>industry price stabilisation fund under<br>Section 9 (1) of the Sugar Industry Special<br>Funds Ordinance.                                                                           |
| Ordinance No. 39—1954. Sugar<br>Industry Special Funds (Amend-<br>ment) Ordinance, 1954.                                 | 16th December, 1954 ...  | Sugar Industry Special Funds Ordinance,<br>1954, Ch. 23. No. 14              | An Ordinance to amend the Sugar Industry<br>Special Funds Ordinance, Ch. 23. No. 14.                                                                                                                                                                                         |
| <i>Animals (Diseases and Importation)</i><br>Ordinance No. 19—1954 ...                                                   | 22nd April, 1954 ...     | Animals (Diseases and Importation)<br>Ordinance, 1954                        | An Ordinance to make further and better<br>provisions for controlling the importation<br>of Animals, Birds, Reptiles and Insects, and<br>for regulating the treatment and disposal<br>of animals which are suffering or are sus-<br>pected to be suffering from any disease. |
| Government Notice No. 22. Diseases<br>of Animals Ordinance                                                               | 26th January, 1954 ...   | Diseases of Animals Ordinance, Ch. 25.<br>No. 2. Section 13                  | Regulations made by the Governor-in-Council<br>under Section 13 of the Diseases of Animals<br>Ordinance, Ch. 25. No. 2—Prohibition of<br>Importation of swine from the United<br>States of America, Regulations, 1954.                                                       |
| <i>Fish</i><br>Government Notice No. 57. Im-<br>portation of Ornamental Fish<br>into the Colony                          | 13th April, 1954 ...     | Control of importation of Live Fish<br>Ordinance, Ch. 32. No. 16             | Approval given for the importation into the<br>colony of certain ornamental fish for<br>aquarium use.                                                                                                                                                                        |

LEGISLATION—CONTINUED

|                                                                                                        | Date                | References                                                             | Remarks                                                                                                                           |
|--------------------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <i>Wild Animals and Birds</i><br>Gazette Notice No. 474. Hunting and shooting of certain birds         | 18th March, 1954    | ... Wild Animals and Birds (Protection) (Amendment) Ordinance, 1941    | Hunting and shooting of certain birds prohibited from 1st April to 31st October.                                                  |
| Gazette Notice No. 1109. Hunting and shooting of certain birds                                         | 21st June, 1954     | ... Wild Animals and Birds (Protection) (Amendment) Ordinance, 1941    | Hunting and shooting of certain birds permitted from 1st July to 31st December.                                                   |
| Government Notice No. 139. Wild Animals and Birds (Game Wardens) (Amendment) (No. 2) Regulations, 1954 | 3rd August, 1954    | ... Wild Animals and Birds (Game Wardens) Regulations                  | Regulations made by the Governor-in-Council under Section 24 of the Wild Animals and Birds (Protection) Ordinance, Ch. 25. No. 7. |
| Ordinance No. 18—1954. Wild Animals and Birds (Protection) (Amendment) Ordinance, 1954                 | 22nd April, 1954    | ... Wild Animals and Birds (Protection) Ordinance, 1954, Ch. 27. No. 7 | An Ordinance to amend the Wild Animals and Birds (Protection) Ordinance, Ch. 25. No. 7.                                           |
| Gazette Notice No. 161. Wild Animals and Birds (Game Wardens) (Amendment) Regulations, 1954            | 12th October, 1954  | ... Wild Animals and Birds (Protection) Ordinance, Ch. 25. No. 7       | Regulations made by the Governor-in-Council under Section 24 of the Wild Animals and Birds (Protection) Ordinance, Ch. 25. No. 7. |
| Gazette Notice No. 163. Wild Animals and Birds (Protection) (Amendment) Regulations, 1954              | 20th October, 1954  | ... Wild Animals and Birds (Protection) Ordinance, Ch. 25. No. 7       | Regulations made by the Governor-in-Council under Section 24 of the Wild Animals and Birds (Protection) Ordinance.                |
| Gazette Notice No. 2193. Shooting and hunting of certain animals and birds                             | 20th December, 1954 | ... Wild Animals and Birds (Protection) Ordinance                      | Shooting and hunting of certain birds prohibited.                                                                                 |
| <i>Marketing</i><br>Ordinance No. 32—1954. Marketing Board (Amendment) Ordinance, 1954                 | 4th June, 1954      | ... Marketing Board Ordinance, Ch. 23. No. 8                           | An Ordinance to amend the Marketing Board Ordinance, Ch. 23. No. 8.                                                               |

TABLE I—CROWN LANDS RECOMMENDED FOR 25-YEAR LEASE OR PROBATIONARY AGREEMENTS—1950-1954

|                                           | No.<br>1950-<br>53 | Acreage<br>1950-53 |    |    | No.<br>1954 | Acreage<br>1954 |    |    | Total<br>No.<br>1950-<br>54 | Total<br>Acreage<br>1950-54 |    |    |
|-------------------------------------------|--------------------|--------------------|----|----|-------------|-----------------|----|----|-----------------------------|-----------------------------|----|----|
|                                           |                    | A.                 | R. | P. |             | A.              | R. | P. |                             | A.                          | R. | P. |
| <i>Recommended and Executed</i>           |                    |                    |    |    |             |                 |    |    |                             |                             |    |    |
| (a) 25-year leases                        | 31                 | 815                | 2  | 01 | 3           | 15              | 3  | 33 | 34                          | 831                         | 1  | 34 |
| (b) Probationary Agreements ...           | 177                | 1,633              | 3  | 05 | 78          | 665             | 1  | 38 | 255                         | 2,299                       | 1  | 03 |
| <i>Recommended and awaiting execution</i> |                    |                    |    |    |             |                 |    |    |                             |                             |    |    |
| (a) 25-year leases                        | —                  | —                  |    |    | 35          | 446             | 0  | 10 | 35                          | 446                         | 0  | 10 |
| (b) Probationary Agreements ...           | —                  | —                  |    |    | 68          | 724             | 3  | 05 | 68                          | 724                         | 3  | 05 |
| TOTAL ...                                 |                    |                    |    |    | 184         | 1,842           | 1  | 06 | 392                         | 4,301                       | 2  | 12 |

TABLE II—GUARANTEED MINIMUM PRICES FOR LOCALLY-GROWN FOODS

|                                        | Price per lb. |
|----------------------------------------|---------------|
| Pigeon peas, dry shelled ... ..        | 12 Cents      |
| Black-eyed peas, dry shelled ... ..    | 12 „          |
| Soya beans, dry shelled ... ..         | 12 „          |
| Corn, dry shelled ... ..               | 5 „           |
| Yams—Lisbon variety only ... ..        | 4 „           |
| Sweet potatoes ... ..                  | 3 „           |
| Tannias ... ..                         | 3 „           |
| Eddoes ... ..                          | 1 „           |
| Adlay, dry threshed grain ... ..       | 5 „           |
| Sesame (or Bene) ... ..                | 12 „          |
| Plantains—Fingers ... ..               | 4½ „          |
| Plantains—Stems ... ..                 | 4 „           |
| Bananas—Gros Michel and Sucrier ... .. | 1½ „          |
| Bananas—Governor ... ..                | 1 „           |

TABLE III—ANNUAL RAINFALL, TRINIDAD AND TOBAGO

| Station                                |  |  |  | Total<br>1954, inches | Mean—23 Yrs.<br>inches |
|----------------------------------------|--|--|--|-----------------------|------------------------|
| <i>North Trinidad :</i>                |  |  |  |                       |                        |
| River Estate, Diego Martin ...         |  |  |  | 77.74                 | 77.52                  |
| St. Clair, Port-of-Spain ...           |  |  |  | 66.14                 | 67.78                  |
| La Pastora, Santa Cruz ...             |  |  |  | 85.51                 | 84.65                  |
| I.C.T.A., St. Augustine ...            |  |  |  | 72.59                 | 86.10                  |
| Meteorological Station, Piarco ...     |  |  |  | 74.32                 | 72.82                  |
| Frederick Estate, Caroni ...           |  |  |  | 67.00                 | 84.29                  |
| Torrecilla Estate, Arima ...           |  |  |  | 85.64                 | 94.21                  |
| Works and Hydraulics, Toco ...         |  |  |  | 71.07                 | 71.47                  |
| Hollis Reservoir, Valencia ...         |  |  |  | 116.96                | 120.76                 |
| Sans Souci Estate, Sangre Grande ...   |  |  |  | 115.89                | 111.30                 |
| <i>Central Trinidad :</i>              |  |  |  |                       |                        |
| Waterloo Estate, Waterloo ...          |  |  |  | 65.68                 | 65.34                  |
| Todds Road Estate ...                  |  |  |  | 71.27                 | 78.65                  |
| Tamana Teak Plantation ...             |  |  |  | 114.39                | 114.03                 |
| McBean Estate, Couva ...               |  |  |  | 57.48                 | 65.71                  |
| Forres Park Estate, Claxton Bay ...    |  |  |  | 59.49                 | 60.83                  |
| New Lands Estate, Biche ...            |  |  |  | 109.29                | 101.36                 |
| Marper Farm, Manzanilla ...            |  |  |  | 114.25                | 105.57                 |
| Brasso Tamana ...                      |  |  |  | 92.17                 | 102.66                 |
| Cocal Estate, Nariva ...               |  |  |  | 84.26                 | —                      |
| <i>South Trinidad :</i>                |  |  |  |                       |                        |
| Brothers Estate, Williamsville ...     |  |  |  | 70.22                 | 81.33                  |
| Usine Ste. Madeleine, San Fernando ... |  |  |  | 66.00                 | 68.51                  |
| Perseverance Estate, Cedros ...        |  |  |  | 70.39                 | 58.39                  |
| Poole Syndicate, Rio Claro ...         |  |  |  | 88.65                 | 107.15                 |
| Navet C.M. School, Rio Claro ...       |  |  |  | 76.77                 | —                      |
| Point Fortin Filtration Plant ...      |  |  |  | 73.21                 | 80.05                  |
| T.L.L., Barrackpore, Penal ...         |  |  |  | 68.96                 | 68.92                  |
| Mayaro Police Station, Mayaro ...      |  |  |  | 61.62                 | 83.85                  |
| Moruga Police Station, Moruga ...      |  |  |  | 73.69                 | 71.69                  |
| T.L.L., Guayaguayare ...               |  |  |  | 101.55                | 87.76                  |
| Siparia Old Road, Fyzabad ...          |  |  |  | 65.34                 | 59.85                  |
| <i>Tobago :</i>                        |  |  |  |                       |                        |
| Botanic Gardens ...                    |  |  |  | 68.11                 | 79.32                  |
| Government Farm ...                    |  |  |  | 52.45                 | 68.57                  |
| Friendship Estate ...                  |  |  |  | 56.20                 | —                      |
| Hermitage Estate ...                   |  |  |  | 98.96                 | 95.83                  |
| Green Hill Estate ...                  |  |  |  | 89.36                 | —                      |
| Kendal Estate ...                      |  |  |  | 96.36                 | 96.64                  |

TABLE IV—MEAN MONTHLY RAINFALL, TRINIDAD AND TOBAGO

| Month         |  |  |  | 1954, inches | 23-Year<br>Mean, inches |
|---------------|--|--|--|--------------|-------------------------|
| January ...   |  |  |  | 3.6          | 5.9                     |
| February ...  |  |  |  | 2.3          | 4.8                     |
| March ...     |  |  |  | 2.5          | 2.9                     |
| April ...     |  |  |  | 3.3          | 3.2                     |
| May ...       |  |  |  | 3.2          | 5.7                     |
| June ...      |  |  |  | 8.2          | 11.8                    |
| July ...      |  |  |  | 9.7          | 9.9                     |
| August ...    |  |  |  | 9.0          | 11.1                    |
| September ... |  |  |  | 7.7          | 6.8                     |
| October ...   |  |  |  | 9.5          | 6.9                     |
| November ...  |  |  |  | 12.4         | 8.4                     |
| December ...  |  |  |  | 10.5         | 8.9                     |
| TOTAL ...     |  |  |  | 81.9         | 86.3                    |



TABLE V—ANIMALS IMPORTED INTO TRINIDAD, 1954

| Type                                 | Source                          | No. | Total |
|--------------------------------------|---------------------------------|-----|-------|
| <i>Animals for Slaughter</i>         |                                 |     |       |
| SWINE ... ..                         | ...                             | —   | —     |
| GOATS ... ..                         | British West Indies ... ..      | 5   | 5     |
| SHEEP ... ..                         | British West Indies ... ..      | 7   | 7     |
| <i>Animals for Breeding and Work</i> |                                 |     |       |
| SWINE ... ..                         | British West Indies ... ..      | 1   | 1     |
| CATTLE ... ..                        | British West Indies ... ..      | 61  | 61    |
| GOATS ... ..                         | British West Indies ... ..      | 1   | 1     |
| HORSES ... ..                        | British West Indies ... ..      | 135 | 149   |
|                                      | Canada ... ..                   | 13  |       |
|                                      | United States of America ... .. | 1   |       |
| ASSES ... ..                         | British West Indies ... ..      | 22  | 24    |
|                                      | United States of America ... .. | 2   |       |
| MULES ... ..                         | British West Indies ... ..      | 34  | 151   |
|                                      | United States of America ... .. | 117 |       |
| DOGS ... ..                          | British West Indies ... ..      | 67  | 68    |
|                                      | Argentina ... ..                | 1   |       |
| CATS ... ..                          | Nil ... ..                      |     |       |

TABLE VI—IMPORTATION OF FRESH, CHILLED OR FROZEN MEAT

| Country                                         | lb.       | lb.       |
|-------------------------------------------------|-----------|-----------|
| <i>Fresh, chilled or frozen beef or veal</i>    |           |           |
| Australia ... ..                                | 1,201,122 | 4,996,497 |
| New Zealand ... ..                              | 3,792,437 |           |
| Netherlands ... ..                              | 55        |           |
| British West Indies ... ..                      | 2,883     |           |
| <i>Fresh, chilled or frozen mutton and lamb</i> |           |           |
| New Zealand ... ..                              | 706,556   | 749,535   |
| Australia ... ..                                | 42,979    |           |
| <i>Fresh, chilled or frozen pork</i>            |           |           |
| New Zealand ... ..                              | 445,784   | 489,214   |
| Argentine ... ..                                | 21,681    |           |
| Netherlands ... ..                              | 15,670    |           |
| Africa ... ..                                   | 76        |           |
| Australia ... ..                                | 5,487     |           |
| Denmark ... ..                                  | 516       |           |
| <i>Fresh, chilled or frozen poultry</i>         |           |           |
| British West Indies ... ..                      | 23,497    | 304,406   |
| Canada and Newfoundland ... ..                  | 194,233   |           |
| United States of America ... ..                 | 14,484    |           |
| Denmark ... ..                                  | 59,680    |           |
| Australia ... ..                                | 5,637     |           |
| Netherlands ... ..                              | 3,993     |           |
| Argentine ... ..                                | 2,108     |           |
| Union of South Africa ... ..                    | 774       |           |

TABLE VII—AGRICULTURAL EXPORTS TRINIDAD AND TOBAGO, 1954

|                                            |     |              |     |           | Quantity   | Value      | Value        |
|--------------------------------------------|-----|--------------|-----|-----------|------------|------------|--------------|
|                                            |     |              |     |           |            | \$         | \$           |
| <i>Sugar and By-Products</i>               |     |              |     |           |            |            |              |
| Sugar (unrefined)                          | ... | ...cwt.      | ... | 2,996,150 | 28,071,273 |            |              |
| Sugar (refined)                            | ... | ...lb.       | ... | 95,904    | 12,642     |            |              |
| Molasses, inedible (raw)                   | ... | ...cwt.      | ... | 94,108    | 75,301     | 28,159,216 |              |
| <i>Cacao</i>                               |     |              |     |           |            |            |              |
| Beans                                      | ... | ...cwt.      | ... | 157,507   | 15,047,820 |            |              |
| Butter                                     | ... | ...lb.       | ... | 31,580    | 53,526     |            |              |
| Powder                                     | ... | ...lb.       | ... | 400       | 230        | 15,106,576 |              |
| <i>Citrus</i>                              |     |              |     |           |            |            |              |
| Lime juice (raw)                           | ... | ...liq. gal. | ... | 5,574     | 6,129      |            |              |
| Lime juice (concentrated)                  | ... | ...          | ... | 1,171     | 2,887      |            |              |
| Limes, Fresh                               | ... | ...lb.       | ... | 4,865     | 706        |            |              |
| Grapefruit, Fresh                          | ... | ...lb.       | ... | 7,655,184 | 475,367    |            |              |
| Oranges, tangerines and mandarins          | ... | ...lb.       | ... | 3,365,608 | 250,397    |            |              |
| Canned grapefruit juice                    | ... | ...liq. gal. | ... | 761,416   | 937,448    |            |              |
| Canned orange juice                        | ... | ...          | ... | 166,039   | 292,342    |            |              |
| Canned orange and grapefruit juice (mixed) | ... | ...          | ... | 24,960    | 30,577     | 1,995,853  |              |
| <i>Tonca Beans</i>                         |     |              |     |           |            |            |              |
| Tonca Beans                                | ... | ... lb.      | ... | 23,846    | 37,054     | 37,054     |              |
| <i>Rubber</i>                              |     |              |     |           |            |            |              |
| Rubber                                     | ... | ...          | ... | —         | —          | —          |              |
| <i>Coffee</i>                              |     |              |     |           |            |            |              |
| Coffee, raw                                | ... | ...cwt.      | ... | 35,477    | 3,835,294  | 3,835,294  |              |
| <i>Coconuts and Derivatives</i>            |     |              |     |           |            |            |              |
| Coconut oil, unrefined                     | ... | ...lb.       | ... | 80        | 24         |            |              |
| Coir fibre                                 | ... | ...lb.       | ... | 230,312   | 15,787     |            |              |
| Copra                                      | ... | ...cwt.      | ... | 17,000    | 265,880    | 281,691    |              |
| <i>Vegetables</i>                          |     |              |     |           |            |            |              |
| Vegetables, Fresh and Dry                  | ... | ...lb.       | ... | 412,368   | 94,961     |            |              |
| Beans, Peas, Lentils, &c.                  | ... | ...lb.       | ... | 16,152    | 2,219      | 97,180     |              |
| <i>Fresh Fruit, Other Sorts</i>            |     |              |     |           |            |            |              |
| Fresh Fruit, Other sorts                   | ... | ...lb.       | ... | 515,726   | 81,677     |            |              |
| Bananas                                    | ... | ...lb.       | ... | 5,538,776 | 272,672    | 354,349    |              |
| <i>Livestock and Hides</i>                 |     |              |     |           |            |            |              |
| Live animals, chiefly for food             | ... | ...          | ... | 541       | 5,395      |            |              |
| Live animals, other than for food          | ... | ...          | ... | 822,269   | 117,191    |            |              |
| Hides                                      | ... | ...lb.       | ... | 27,587    | 2,667      | 125,253    |              |
| <i>Honey</i>                               |     |              |     |           |            |            |              |
| Natural Honey                              | ... | ...lb.       | ... | 27,499    | 6,084      | 6,084      |              |
| <i>Milk</i>                                |     |              |     |           |            |            |              |
| Milk and Cream, fresh                      | ... | ...lb.       | ... | 50,298    | 8,471      | 8,471      |              |
| <i>Spices</i>                              |     |              |     |           |            |            |              |
| Nutmeg                                     | ... | ...lb.       | ... | 33,064    | 10,001     |            |              |
| Mace                                       | ... | ...lb.       | ... | 83        | 50         |            |              |
| Pepper and Pimento                         | ... | ...lb.       | ... | 130       | 50         |            |              |
| Ginger and other spices                    | ... | ...lb.       | ... | 7,919     | 4,864      | 14,965     |              |
| TOTAL VALUE                                |     |              |     |           |            |            | \$50,021,986 |

TABLE VIII—EXPORTS OF MANUFACTURED AGRICULTURAL PRODUCTS,  
TRINIDAD AND TOBAGO, 1954

| Item                                                       | Quantity   | Value     | Value       |
|------------------------------------------------------------|------------|-----------|-------------|
|                                                            |            | \$        | \$          |
| <i>Sugar and By-Products</i>                               |            |           |             |
| Rum ... ..p. gal. ...                                      | 297,663    | 1,188,487 |             |
| Syrup and Molasses (edible) ...lb. ...                     | 47,418,120 | 346,949   | 1,535,436   |
| <i>Citrus</i>                                              |            |           |             |
| Lime oil (distilled) ... ..lb. ...                         | 5,967      | 55,738    | 55,738      |
| <i>Coffee</i>                                              |            |           |             |
| Coffee (prepared) ... ..lb. ...                            | 18,635     | 24,749    | 24,749      |
| <i>Coconuts and Derivatives</i>                            |            |           |             |
| Coconut oil (refined) ...lb. ...                           | 1,298,512  | 351,609   |             |
| Lard Substitute ... ..lb. ...                              | 184,659    | 69,336    | 420,945     |
| <i>Vegetable and Animal Products</i>                       |            |           |             |
| Margarine (vegetable animal or mixed) ... ..lb. ...        | 720,324    | 289,143   |             |
| Other sorts of lard substitute lb. ...                     | 24,408     | 8,580     | 297,723     |
| <i>Soap</i>                                                |            |           |             |
| Acid, fatty and solid oils including Stock Soap ...lb. ... | 105,690    | 20,082    |             |
| Hard Soap ... ..lb. ...                                    | 978,585    | 184,374   | 204,456     |
| <i>Bitters</i>                                             |            |           |             |
| Bitters ... ..liq. gal. ...                                | 62,108     | 657,032   | 657,032     |
| <i>Jam, Marmalade and Fruit Jellies</i>                    |            |           |             |
| Jam, Marmalade and Fruit Jellies ... ..lb. ...             | 2,679      | 1,119     | 1,119       |
| <i>Wine</i>                                                |            |           |             |
| In bottle ... ..liq. gal. ...                              | 7,365      | 16,722    |             |
| In wood ... .." ...                                        | 3,390      | 4,916     | 21,638      |
| TOTAL VALUE ... ..                                         |            |           | \$3,218,836 |

TABLE IX—TRINIDAD CROP STATISTICS—SUGAR

|                                            | 1954               | 1953               |
|--------------------------------------------|--------------------|--------------------|
| Estates' canes ground, tons ... ..         | 1,111,470 (66.96%) | 1,047,945 (69.91%) |
| Farmers' canes ground, tons ... ..         | 548,322 (33.04%)   | 451,036 (30.09%)   |
| Total canes ground, tons ... ..            | 1,659,792          | 1,498,981          |
| Sugar output, tons ... ..                  | 172,767            | 152,618            |
| Cane per ton sugar, tons ... ..            | 9.61               | 9.82               |
| Estates' area reaped, acres ... ..         | 37,309             | 35,191             |
| Average estate yield per acre, tons ... .. | 29.79              | 29.78              |
| Estimated standover canes                  |                    |                    |
| Estate, tons ... ..                        | —                  | 744                |
| Farmers, tons ... ..                       | —                  | —                  |
| Price Farmers' canes per ton ... ..        | \$11.81            | \$11.36            |

TABLE X—EXPORTS AND VALUE OF RAW CACAO, TRINIDAD AND TOBAGO

| Year |     |     |     | Exports    | Value      |
|------|-----|-----|-----|------------|------------|
|      |     |     |     | lb.        | \$         |
| 1950 | ... | ... | ... | 16,197,928 | 8,360,678  |
| 1951 | ... | ... | ... | 19,316,640 | 11,563,270 |
| 1952 | ... | ... | ... | 14,087,360 | 8,237,141  |
| 1953 | ... | ... | ... | 21,684,496 | 11,720,925 |
| 1954 | ... | ... | ... | 17,640,784 | 15,047,820 |

TABLE XI—DISPOSAL OF LIVESTOCK AND CROPS FROM DEMONSTRATION STATIONS  
BOTANIC STATION, TOBAGO, MINOR STATIONS AND BREEDING UNITS

|                      |     |     |     | Consumption | Planting or Breeding |
|----------------------|-----|-----|-----|-------------|----------------------|
| <b>LIVESTOCK</b>     |     |     |     |             |                      |
| <i>Cattle</i>        |     |     |     |             |                      |
| Cows                 | ... | ... | ... | 5           | 1                    |
| Steers               | ... | ... | ... | 3           | —                    |
| Bull calves          | ... | ... | ... | —           | 2                    |
| Milk                 | ... | ... | ... | 18,242 lb.  | —                    |
| <i>Pigs</i>          |     |     |     |             |                      |
| Sows                 | ... | ... | ... | 10          | 1                    |
| Piglets              | ... | ... | ... | 8           | 332                  |
| Boars                | ... | ... | ... | 1           | 5                    |
| <i>Goats</i>         |     |     |     |             |                      |
| Bucks                | ... | ... | ... | 2           | 2                    |
| Does                 | ... | ... | ... | 1           | 0                    |
| Kids                 | ... | ... | ... | 3           | 3                    |
| <i>Rabbits</i>       |     |     |     |             |                      |
| Bucks                | ... | ... | ... | 22          | 40                   |
| Does                 | ... | ... | ... | 5           | 42                   |
| Bunnies              | ... | ... | ... | —           | 69                   |
| <i>Poultry</i>       |     |     |     |             |                      |
| Cocks                | ... | ... | ... | 46          | 75                   |
| Ducks                | ... | ... | ... | —           | 20                   |
| Hens                 | ... | ... | ... | 87          | 69                   |
| Chicks               | ... | ... | ... | 53          | 117                  |
| Ducklings            | ... | ... | ... | —           | 4                    |
| Eggs                 | ... | ... | ... | 13,738      | 4,134                |
| Exchange (cockerels) | ... | ... | ... | 200         | —                    |
| <b>CROPS</b>         |     |     |     |             |                      |
| Coconuts             | ... | ... | ... | 7,869       | 475                  |
| Cocoa                | ... | ... | ... | 13,548 lb.  | —                    |
| Coffee               | ... | ... | ... | 6,025 lb.   | —                    |
| Limes                | ... | ... | ... | 375 lb.     | 397                  |
| Grapefruit           | ... | ... | ... | 7,426       | 1,019                |
| Oranges              | ... | ... | ... | 26,749      | —                    |
| Bananas              | ... | ... | ... | 28,256 lb.  | 187                  |
| Bananas (Stem)       | ... | ... | ... | 39          | —                    |
| Plantains            | ... | ... | ... | 9,827       | 1,683                |
| Maize                | ... | ... | ... | 10,415 lb.  | 12                   |
| Rice                 | ... | ... | ... | 11,633 lb.  | 1,188 lb.            |
| Yams                 | ... | ... | ... | 22,736 lb.  | 822 lb.              |
| Tannias              | ... | ... | ... | 896 lb.     | —                    |
| Dasheen              | ... | ... | ... | 962 lb.     | —                    |
| Eddoes               | ... | ... | ... | 182 lb.     | —                    |
| Cassava              | ... | ... | ... | 14,965 lb.  | —                    |



TABLE XI—DISPOSAL OF LIVESTOCK AND CROPS FROM DEMONSTRATION STATIONS,  
BOTANIC STATION, TOBAGO, MINOR STATIONS, AND BREEDING UNITS—*Continued*

|                                    | Consumption | Planting or<br>Breeding |
|------------------------------------|-------------|-------------------------|
| <b>CROPS—<i>Contd.</i></b>         |             |                         |
| Melons ... ..                      | 20,494      | —                       |
| Sweet Potatoes ... ..              | 9,900 lb.   | 50 lb.                  |
| Copra ... ..                       | 10,923 lb.  | —                       |
| Bene ... ..                        | 7 lb.       | —                       |
| Topi Tambo ... ..                  | 4 lb.       | —                       |
| Pumpkins ... ..                    | 673 lb.     | —                       |
| Peas ... ..                        | 1,965 lb.   | 321                     |
| Banana suckers ... ..              | —           | 1,365                   |
| Vegetable (Mixed) ... ..           | 2,436 lb.   | —                       |
| Vegetables (Fresh) ... ..          | 2,642 lb.   | —                       |
| Vegetable Seedlings ... ..         | —           | 1,224                   |
| Vegetable boxes ... ..             | —           | 500                     |
| Coffee Plants ... ..               | —           | 608                     |
| Mandarins ... ..                   | —           | 14                      |
| Manilla Hemp (stems) ... ..        | —           | 2                       |
| Melon Seeds (lb.) ... ..           | —           | 3½                      |
| Tannia Suckers ... ..              | —           | 300                     |
| Palms and Ornamental shrubs ... .. | —           | 430                     |
| Orange Plants ... ..               | —           | 1,138                   |
| Lettuce (Head) ... ..              | 2,421       | —                       |
| Kudzu ... ..                       | —           | ¾                       |
| Cassava cuttings ... ..            | —           | 2,974                   |
| Avocado ... ..                     | 241         | 157                     |
| Other Fruits ... ..                | 2,329       | 1,061                   |
| Beans ... ..                       | 122         | —                       |
| Elephant Grass ... ..              | —           | 3,000                   |
| Guatemala Grass ... ..             | —           | 7,750                   |
| Honey ... ..                       | 118 Pts.    | 1                       |
| Budded Plants ... ..               | —           | 806                     |

REVENUE FROM BREEDING UNITS (STUD SERVICES)

| Breeding Unit         | Revenue           |
|-----------------------|-------------------|
|                       | \$ c.             |
| Alandale ... ..       | 66 50             |
| Balmain ... ..        | 203 25            |
| Brasso Caparo ... ..  | 122 25            |
| Cedros ... ..         | 193 25            |
| Charlotteville ... .. | 73 89             |
| El Reposo ... ..      | 216 50            |
| El Recuerdo ... ..    | 159 00            |
| Louis d'Or ... ..     | 100 67            |
| La Pastora ... ..     | 18 00             |
| Mucurapo ... ..       | 337 25            |
| Moruga ... ..         | 125 50            |
| Mt. St. George ... .. | 110 69            |
| O'Meara ... ..        | 234 00            |
| Plum Mitán ... ..     | 52 50             |
| Princes Town ... ..   | 99 00             |
| Penal ... ..          | 152 25            |
| Poole ... ..          | 57 25             |
| Parlatuvier ... ..    | 43 48             |
| Rio Claro ... ..      | 91 75             |
| Runnemedé ... ..      | 151 60            |
| River Estate ... ..   | 213 78            |
| <b>TOTAL ... ..</b>   | <b>\$2,822 36</b> |

TABLE XII—EXTENSION SERVICES

|                        | Louis d'Or       | Rio Claro        | El Reposo        | Penal            | Grand<br>Total<br>Revenue |
|------------------------|------------------|------------------|------------------|------------------|---------------------------|
|                        | \$ c.            | \$ c.            | \$ c.            | \$ c.            | \$ c.                     |
| <i>Stock</i>           |                  |                  |                  |                  |                           |
| Poultry ...            | 583 95           | 935 83           | 220 00           | 13 71            | 1,753 49                  |
| Eggs ...               | 313 64           | 860 99           | 499 48           | 50               | 1,674 61                  |
| Animals ...            | 2,934 60         | 2,777 70         | 2,107 84         | 1,802 50         | 9,622 64                  |
| Milk ...               | 275 46           | 57 70            | 824 00           | 278 18           | 1,435 34                  |
| <i>Crops</i>           |                  |                  |                  |                  |                           |
| Cacao ...              | 4,330 28         | 1,634 72         | 3,782 74         | —                | 9,747 74                  |
| Coffee ...             | —                | 8 40             | 155 22           | —                | 163 62                    |
| Rice ...               | —                | 231 80           | —                | 443 00           | 674 80                    |
| Fruit ...              | 679 86           | 791 46           | 381 11           | —                | 1,852 43                  |
| Vegetables ...         | 82 43            | 189 32           | 91 54            | 1,251 77         | 1,615 06                  |
| Ground Provisions      | 153 90           | 1,122 75         | 140 17           | 2 56             | 1,419 38                  |
| Coconuts ...           | 37 62            | —                | —                | —                | 37 62                     |
| Copra ...              | 1,228 43         | —                | —                | —                | 1,228 43                  |
| Maize ...              | 217 29           | 146 74           | 147 11           | 4 38             | 515 52                    |
| Miscellaneous ...      | 387 04           | 27 02            | 115 66           | 119 63           | 649 35                    |
| <b>TOTAL ...</b>       | <b>11,224 50</b> | <b>8,784 43</b>  | <b>8,464 87</b>  | <b>3,916 23</b>  | <b>32,390 03</b>          |
| <b>Expenditure ...</b> | <b>27,812 36</b> | <b>25,957 79</b> | <b>27,975 01</b> | <b>12,321 62</b> |                           |
| <b>Percentage ...</b>  | <b>40%</b>       | <b>34%</b>       | <b>30%</b>       | <b>31%</b>       |                           |

|                                      |     |     |     |     |                    |
|--------------------------------------|-----|-----|-----|-----|--------------------|
|                                      |     |     |     |     | \$ c.              |
| Revenue from Breeding Units ...      | ... | ... | ... | ... | 2,882 36           |
| Revenue from Minor Stations, &c. ... | ... | ... | ... | ... | 3,657 18           |
| Revenue from Botanic Station ...     | ... | ... | ... | ... | 2,891 53           |
| <b>TOTAL REVENUE</b>                 |     |     | ... | ... | <b>\$41,821 10</b> |

TABLE XIII—REVENUE FROM THE CENTRAL EXPERIMENT AND ST. AUGUSTINE STATIONS, 1954

| Year     | Central Experiment Station<br>Value | Year     | St. Augustine Station<br>Value |
|----------|-------------------------------------|----------|--------------------------------|
|          | \$ c.                               |          | \$ c.                          |
| 1949 ... | 11,364 00                           | 1949 ... | 55,963 00                      |
| 1950 ... | 26,503 50                           | 1950 ... | 62,988 00                      |
| 1951 ... | 36,189 91                           | 1951 ... | 65,000 00                      |
| 1952 ... | 41,618 56                           | 1952 ... | 65,058 00                      |
| 1953 ... | 72,669 95                           | 1953 ... | 64,867 00                      |
| 1954 ... | 61,555 85                           | 1954 ... | 66,425 00                      |

TABLE XIV—DISTRIBUTION BY SIZE OF ESTATE OF APPROVED APPLICATIONS FOR COCOA SUBSIDY, 1952-1954

|                            | At end of 1952 | At end of 1953 | At end of 1954 |
|----------------------------|----------------|----------------|----------------|
| Estates under 25 acres ... | 1,155          | 1,652          | 2,449          |
| Estates 25/50 „ ...        | 218            | 262            | 348            |
| Estates over 50 acres ...  | 415            | 447            | 508            |
| TOTAL ...                  | 1,788          | 2,361          | 3,305          |

TABLE XV—DISTRIBUTION TO PLANTERS—COMPOSITION BY VARIETIES

| Variety                                | TOBAGO |                   | TRINIDAD      |                    |                       |                       |
|----------------------------------------|--------|-------------------|---------------|--------------------|-----------------------|-----------------------|
|                                        | %      | From La Pastora % | From Marper % | From Est. Props. % | Colony Average 1954 % | Colony Average 1953 % |
| ICS. 1 ...                             | 31.46  | 10.58             | 17.38         | 20.50              | 15.66                 | 18.0                  |
| ICS. 6, 8, 9 and 10 ...                | 9.77   | 3.82              | 0.06          | 0.50               | 3.84                  | 2.0                   |
| ICS. 39 and 40 ...                     | 1.53   | 10.98             | —             | 2.84               | 7.59                  | 6.0                   |
| ICS. 60 ...                            | —      | 2.07              | —             | 1.51               | 1.56                  | 0.5                   |
| ICS. 89 ...                            | 0.92   | 1.32              | —             | 0.62               | 1.06                  | 0.5                   |
| ICS. 95 ...                            | 38.55  | 55.28             | 48.64         | 60.43              | 53.66                 | 50.0                  |
| IMC. 67 ...                            | 7.66   | 11.13             | 18.95         | 11.42              | 11.26                 | 10.0                  |
| Other Types (including Ps and PAs) ... | 10.11  | 4.82              | 14.97         | 2.18               | 5.37                  | 13.0                  |

TABLE XVI—DISTRIBUTION BY SIZE OF ESTATE, OF APPROVED APPLICATIONS FOR COCOA REPLACEMENTS, 1952-1954

|                            | At end of 1952 | At end of 1953 | At end of 1954 |
|----------------------------|----------------|----------------|----------------|
| Estates under 25 acres ... | 1,209          | 1,493          | 1,933          |
| Estates 25/50 acres ...    | 234            | 274            | 347            |
| Estates over 50 acres ...  | 249            | 276            | 318            |
| TOTAL ...                  | 1,692          | 2,043          | 2,598          |

TABLE XVII—ACREAGE OF SUGAR CANE VARIETIES REAPED IN TRINIDAD

| Variety             | PERCENTAGE TOTAL ACRES REAPED (SUGAR ESTATES) |      |      |      |
|---------------------|-----------------------------------------------|------|------|------|
|                     | 1951                                          | 1952 | 1953 | 1954 |
| B. 3337 ... ..      | 36.9                                          | 38.3 | 36.1 | 34.0 |
| B. 34104 ... ..     | 27.2                                          | 22.7 | 16.9 | 12.4 |
| B. 37161 ... ..     | 18.8                                          | 21.1 | 21.2 | 20.7 |
| B. 37172 ... ..     | 11.3                                          | 12.1 | 20.5 | 27.7 |
| B. 4098 ... ..      | 1.5                                           | 2.1  | 1.2  | 1.0  |
| B. 41227 ... ..     | 0.5                                           | 0.8  | 0.6  | 0.7  |
| B. 4362 ... ..      | —                                             | 0.1  | 0.9  | 1.2  |
| B.H. 10 (12) ... .. | 1.4                                           | 1.0  | 0.5  | 0.7  |
| Others ... ..       | 2.4                                           | 1.8  | 2.1  | 1.6  |

TABLE XVIII—SUMMARY OF REPORTABLE LIVESTOCK DISEASES OCCURRING IN THE COLONY

| Disease                                   |  |  |  |                             |
|-------------------------------------------|--|--|--|-----------------------------|
| Brucellosis—Number of Cattle tested       |  |  |  | ... 452                     |
| Newcastle Disease ... ..                  |  |  |  | ... 8 outbreaks             |
| Rabies Paralytic (Bat transmitted) ... .. |  |  |  | ... 270 cases               |
| Tuberculosis—                             |  |  |  |                             |
| Number of cattle tested                   |  |  |  | ... 3,249... 0.46% reactors |
| Number of Dairy Goats tested              |  |  |  | ... 93... 0.0 % "           |
| Number of pigs tested                     |  |  |  | ... 35... 0.0 % "           |

TABLE XIX—NUMBERS, CLASSES AND PERCENTAGES OF REACTORS TO TUBERCULIN TESTS

| Class of Livestock | 1952  |            |                 | 1953  |            |                 | 1954  |            |
|--------------------|-------|------------|-----------------|-------|------------|-----------------|-------|------------|
|                    | No.   | % Reactors | Class of Animal | No.   | % Reactors | Class of Animal | No.   | % Reactors |
| Cattle ...         | 4,052 | 2.4        | Cattle ...      | 3,386 | 1.0        | Cattle ...      | 3,249 | .4         |
| Water Buffalo ...  | 62    | 19.4       | Water Buffalo   | 581   | 14.5       | —               | —     | —          |
| Dairy Goats        | 27    | 12.2       | Dairy Goats ... | 16    | 0.0        | Dairy Goats ... | 93    | 0.0        |
| Pigs ...           | 25    | 4.0        | Pigs ...        | 13    | 0.0        | Pigs ...        | 35    | 0.0        |
| Poultry ...        | 171   | 0.0        | Poultry ...     | 350   | 0.0        | —               | —     | —          |



TABLE XX—SERVICES BY SELECTED SIRES—1954

| Class of Sire                 | Trinidad | Tobago | Total |
|-------------------------------|----------|--------|-------|
| Stallions—Thoroughbred ... .. | —        | 9      | 9     |
| Light Draft ... ..            | 2        | 8      | 10    |
| Jacks to Mares ... ..         | 14       | 28     | 42    |
| Jacks to Janets ... ..        | 131      | 61     | 192   |
| Bulls ... ..                  | 2,314    | 265    | 2,579 |
| Boars ... ..                  | 803      | 237    | 1,040 |
| Bucks ... ..                  | 1,285    | 351    | 1,636 |
| Rams ... ..                   | —        | 110    | 110   |

TABLE XXI—COMPARATIVE SALES AT STOCK FARMS—1953 AND 1954

| Class of Animal or Product | 1953   | 1954   | Increase | Decrease |
|----------------------------|--------|--------|----------|----------|
| Cattle ... ..              | 77     | 139    | 62       | —        |
| Horsekind ... ..           | —      | 19     | 19       | —        |
| Pigs ... ..                | 241    | 417    | 176      | —        |
| Goats ... ..               | 17     | 47     | 30       | —        |
| Sheep ... ..               | 48     | 109    | 61       | —        |
| Poultry ... ..             | 256    | 1,988  | 1,732    | —        |
| Eggs ... ..                | 28,571 | 37,492 | 8,921    | —        |

TABLE XXII—MONTHLY CONCEPTION RATE—ARTIFICIAL INSEMINATION SERVICE,  
ST. JOSEPH STOCK FARM FOR PERIOD 1ST MARCH, 1954 TO 31ST OCTOBER, 1954

| Month            | No. of Services | Pregnancies | Conception Rate |
|------------------|-----------------|-------------|-----------------|
| MARCH ... ..     | 32              | 9           | 28%             |
| APRIL ... ..     | 15              | 4           | 26%             |
| MAY ... ..       | 21              | 9           | 43%             |
| JUNE ... ..      | 30              | 14          | 46%             |
| JULY ... ..      | 30              | 15          | 44%             |
| AUGUST ... ..    | 28              | 13          | 47%             |
| SEPTEMBER ... .. | 26              | 16          | 61%             |
| OCTOBER ... ..   | 11              | 7           | 63%             |

TABLE XXIII—COMPARATIVE TOTAL LIVESTOCK STRENGTH—STOCK FARMS 1953 AND 1954

| Class of Animal      | 1953 | 1954  | Increase | Decrease |
|----------------------|------|-------|----------|----------|
| Cattle ... ..        | 521  | 643   | 122      | —        |
| Horsekind ... ..     | 85   | 70    | —        | 15       |
| Water Buffalo ... .. | 21   | 10    | —        | 11       |
| Pigs ... ..          | 229  | 292   | 63       | —        |
| Goats ... ..         | 87   | 139   | 52       | —        |
| Sheep ... ..         | 181  | 102   | —        | 79       |
| Poultry ... ..       | 612  | 1,087 | 475      | —        |

TABLE XXIV—CATTLE STRENGTH STOCK FARMS—1954

| Breed and Sex                    |         |     |     | St. Joseph<br>Stock<br>Farm | Tobago<br>Farm | Centeno<br>Farm | Total |
|----------------------------------|---------|-----|-----|-----------------------------|----------------|-----------------|-------|
| Pure Bred Holstein               | Bulls   | ... | ... | 3                           | —              | —               | 3     |
| Grade Holstein                   | Bulls   | ... | ... | 35                          | 4              | 3               | 42    |
| Grade Holstein                   | Cows    | ... | ... | 112                         | 26             | 90              | 228   |
| Grade Holstein                   | Heifers | ... | ... | 54                          | 19             | 21              | 94    |
| Grade Holstein (Young<br>Stock)  | ...     | ... | ... | 58                          | —              | 22              | 80    |
| Pure Bred Zebu                   | Bulls   | ... | ... | 4                           | —              | —               | 4     |
| Pure Bred Zebu                   | Cows    | ... | ... | 3                           | —              | —               | 3     |
| Pure Bred Zebu (Young<br>Stock)  | ...     | ... | ... | 3                           | —              | —               | 3     |
| Zebu Foundation                  | Bulls   | ... | ... | 5                           | —              | —               | 5     |
| Zebu Foundation                  | Cows    | ... | ... | 6                           | 1              | —               | 7     |
| Zebu Foundation                  | Heifers | ... | ... | 62                          | —              | —               | 62    |
| Zebu Foundation (Young<br>Stock) | ...     | ... | ... | 7                           | —              | —               | 7     |
| Pure Bred Sahiwal                | Bulls   | ... | ... | —                           | 22             | —               | 22    |
| Pure Bred Sahiwal                | Cows    | ... | ... | —                           | 18             | —               | 18    |
| Pure Bred Sahiwal                | Heifers | ... | ... | —                           | 18             | —               | 18    |
| Grade Sahiwal                    | Bulls   | ... | ... | —                           | 9              | —               | 9     |
| Grade Sahiwal                    | Cows    | ... | ... | —                           | 12             | —               | 12    |
| Grade Sahiwal                    | Heifers | ... | ... | —                           | 16             | —               | 16    |
| Water Buffalo                    | Bulls   | ... | ... | 1                           | 2              | —               | 3     |
| Water Buffalo                    | Cows    | ... | ... | —                           | —              | 3               | 3     |
| Water Buffalo                    | Calves  | ... | ... | —                           | —              | 4               | 4     |
| Working Oxen                     | ...     | ... | ... | 6                           | 2              | 2               | 10    |
| TOTAL                            |         |     |     | 359                         | 149            | 145             | 653   |

TABLE XXV—CALVES BORN AT STOCK FARMS—1954

| Breed and Sex     |         |     |     | St. Joseph<br>Farm | Tobago<br>Farm | Centeno<br>Farm | Total |
|-------------------|---------|-----|-----|--------------------|----------------|-----------------|-------|
| Grade Holstein    | Bulls   | ... | ... | 53                 | —              | 29              | 82    |
|                   | Heifers | ... | ... | 55                 | —              | 22              | 77    |
| Zebu              | Bulls   | ... | ... | 5                  | —              | —               | 5     |
|                   | Heifers | ... | ... | 1                  | —              | —               | 1     |
| Pure Bred Sahiwal | Bulls   | ... | ... | —                  | 3              | —               | 3     |
|                   | Heifers | ... | ... | —                  | 4              | —               | 4     |
| Grade Sahiwal     | Bulls   | ... | ... | —                  | 19             | —               | 19    |
|                   | Heifers | ... | ... | —                  | 6              | —               | 6     |
| Water Buffalo     | Bulls   | ... | ... | —                  | —              | 1               | 1     |
|                   | Heifers | ... | ... | —                  | —              | 3               | 3     |
| TOTAL             |         |     |     | 114                | 32             | 55              | 201   |

TABLE XXVI—MILK YIELD, ST. JOSEPH STOCK FARM—1950-1954

| Year |     |     |     | Average No.<br>of cows<br>milked daily | Total<br>Annual Yield<br>lb. | Daily Average<br>yield per cow<br>lb. |
|------|-----|-----|-----|----------------------------------------|------------------------------|---------------------------------------|
| 1950 | ... | ... | ... | 69                                     | 533,349                      | 21                                    |
| 1951 | ... | ... | ... | 60                                     | 553,364                      | 25                                    |
| 1952 | ... | ... | ... | 64                                     | 654,716                      | 28                                    |
| 1953 | ... | ... | ... | 66                                     | 574,333                      | 24                                    |
| 1954 | ... | ... | ... | 72                                     | 598,840                      | 23                                    |

TABLE XXVII—HORSEKIND : STRENGTH ON STOCK FARMS—1954

| Class of Animal        |     |     |     |     | Number |
|------------------------|-----|-----|-----|-----|--------|
| Thoroughbred Stallions | ... | ... | ... | ... | 1      |
| Light Draft            | ... | ... | ... | ... | 2      |
| Mares                  | ... | ... | ... | ... | 19     |
| Fillies                | ... | ... | ... | ... | 2      |
| Colts                  | ... | ... | ... | ... | 1      |
| Geldings               | ... | ... | ... | ... | 2      |
| Mules                  | ... | ... | ... | ... | 7      |
| Mule Foals             | ... | ... | ... | ... | 1      |
| Jack Donkeys           | ... | ... | ... | ... | 18     |
| Janets                 | ... | ... | ... | ... | 14     |
| Jack Foals.            | ... | ... | ... | ... | 2      |
| Janet Foals            | ... | ... | ... | ... | 1      |
| TOTAL                  | ... | ... | ... | ... | 70     |

TABLE XXVIII—PIGS STRENGTH IN STOCK FARMS, 1954

| Breed       |     |     | Boars | Sows | Young Stock | Total |
|-------------|-----|-----|-------|------|-------------|-------|
| Large Black | ... | ... | 14    | 44   | 142         | 200   |
| Berkshire   | ... | ... | 20    | 8    | 64          | 92    |
| TOTAL       | ... | ... | 34    | 52   | 206         | 292   |

TABLE XXIX—GOAT : STRENGTH ON STOCK FARMS, 1954

| Breed                     |     |     | Bucks | Does | Total |
|---------------------------|-----|-----|-------|------|-------|
| Pure Bred British Alpine  | ... | ... | 30    | 13   | 43    |
| Grade Bred British Alpine | ... | ... | 5     | 3    | 8     |
| Pure Bred Anglo Nubian    | ... | ... | 17    | 16   | 33    |
| Grade Bred Anglo Nubian   | ... | ... | 15    | 40   | 55    |
| TOTAL                     | ... | ... | 67    | 72   | 139   |

TABLE XXX—POULTRY : STRENGTH ON STOCK FARMS, 1954

| Class and Breed  | Cocks | Hens | Chicks | Drakes | Ducks | Ducklings |
|------------------|-------|------|--------|--------|-------|-----------|
| Rhode Island Red | 33    | 144  | 447    |        |       |           |
| White Leghorn    | 23    | 161  | 190    |        |       |           |
| Muscovy Ducks    | —     | —    | —      | 11     | 42    | 36        |
| TOTAL            | 56    | 305  | 637    | 11     | 42    | 36        |

TABLE XXXI—REVENUE FROM STOCK FARMS, 1954

| Item                    | St. Joseph<br>Stock Farm | Tobago Farm | Centeno Farm |
|-------------------------|--------------------------|-------------|--------------|
|                         | \$ c.                    | \$ c.       | \$ c.        |
| Sale of Stock ... ..    | 23,192 22                | 13,713 48   | 3,048 76     |
| Sale of Milk ... ..     | 104,524 32               | 8,736 55    | 8,072 63     |
| Sale of Eggs ... ..     | 2,853 64                 | 1,068 68    | —            |
| Stud Fees ... ..        | 746 75                   | 702 01      | —            |
| Pasturage ... ..        | 3 00                     | 127 44      | —            |
| Stabling ... ..         | —                        | 122 00      | —            |
| Sale of Coconuts ... .. | 276 77                   | 1,095 30    | —            |
| Miscellaneous ... ..    | 2,697 11                 | 216 80      | —            |
| TOTAL ... ..            | 134,293 81               | 25,782 26   | 11,121 39    |

TABLE XXXII—PORT-OF-SPAIN WHOLESALE MARKET—PLACES OF ORIGIN AND KINDS OF FISH—1st JULY TO 31st DECEMBER, 1954

| Locality             | Weight in<br>lbs. | % of<br>Total | Species              | Weight in<br>lbs. | % of<br>Total |
|----------------------|-------------------|---------------|----------------------|-------------------|---------------|
| Port-of-Spain ... .. | 433,263           | 17            | Red Fish ... ..      | 79,758            | 3             |
| Carenage ... ..      | 241,155           | 10            | Herring ... ..       | 132,112           | 5             |
| Maracas ... ..       | 89,092            | 4             | Carite and King Fish | 1,738,451         | 69            |
| Blanchisseuse ... .. | 21,245            | —             | —                    | —                 | —             |
| Matelot ... ..       | 15,084            | —             | Shrimp ... ..        | 4,249             | —             |
| Toco ... ..          | 25,929            | 1             | Salmon ... ..        | 66,505            | 3             |
| Couva ... ..         | 53,212            | 2             | Cavalli ... ..       | 168,934           | 7             |
| Cedros ... ..        | 1,456,893         | 59            | Paoua ... ..         | 10,628            | —             |
| Mayaro ... ..        | 67,985            | 3             | Shark ... ..         | 107,311           | 5             |
| San Fernando ... ..  | 104,052           | 4             | —                    | —                 | —             |
| Miscellaneous ... .. | 166               | —             | Miscellaneous ...    | 200,128           | 8             |
| TOTAL ... ..         | 2,508,076         | 100%          |                      | 2,508,076         | 100%          |

TABLE XXXIII—TOTAL FISH HANDLED ON CERTAIN MARKETS DURING 1954\*

|                      |               |
|----------------------|---------------|
| PORT-OF-SPAIN ... .. | 4,190,207 lb. |
| SAN FERNANDO ... ..  | 1,492,951 lb. |
| SANGRE GRANDE ... .. | 221,945 lb.   |

\*It is possible that the same fish sometimes appears at more than one market.



TABLE XXXIV—IMPORTS OF CURED FISH

| Country of Origin                          | Weight in lb. | Value in \$B.W.I. |
|--------------------------------------------|---------------|-------------------|
| <i>(Cod)</i>                               |               |                   |
| United Kingdom ... ..                      | 1,567,414     | 471,187 00        |
| Canada and Newfoundland ... ..             | 4,572,636     | 1,316,529 00      |
| Union of South Africa ... ..               | 16            | 8 00              |
| Iceland ... ..                             | 4,950         | 1,080 00          |
| Netherlands ... ..                         | 964           | 1,056 00          |
| France ... ..                              | 896           | 218 00            |
| Denmark ... ..                             | 16,688        | 5,011 00          |
| Norway ... ..                              | 594           | 262 00            |
| French Territories in North America ... .. | 2,200         | 619 00            |
|                                            | 6,166,358     | 1,795,970 00      |
| <i>(Salmon and Trout)</i>                  |               |                   |
| Canada and Newfoundland ... ..             | 93,944        | 47,450 00         |
| Japan ... ..                               | 5             | 34 00             |
|                                            | 93,949        | 47,484 00         |
| <i>(Mackerel)</i>                          |               |                   |
| United Kingdom ... ..                      | 7,425         | 1,158 00          |
| Union of South Africa ... ..               | 50            | 12 00             |
| Canada and Newfoundland ... ..             | 10,650        | 2,782 00          |
| Netherlands ... ..                         | 7,830         | 1,356 00          |
| China ... ..                               | 130           | 236 00            |
|                                            | 26,085        | 5,574 00          |
| <i>(Herring)</i>                           |               |                   |
| United Kingdom ... ..                      | 239,696       | 41,785 00         |
| Canada and Newfoundland ... ..             | 36,002        | 6,063 00          |
| Union of South Africa ... ..               | 54            | 23 00             |
| Netherlands ... ..                         | 95,694        | 15,039 00         |
| Denmark ... ..                             | 26            | 12 00             |
| China ... ..                               | 190           | 558 00            |
| Norway ... ..                              | 87,180        | 14,298 00         |
|                                            | 458,842       | 77,778 00         |
| <i>(Others)</i>                            |               |                   |
| United Kingdom ... ..                      | 70,427        | 23,283 00         |
| Canada ... ..                              | 28,623        | 10,034 00         |
| British Guiana ... ..                      | 1,870         | 1,967 00          |
| Union of South Africa ... ..               | 200           | 50 00             |
| Hong Kong ... ..                           | 755           | 1,567 00          |
| United States of America ... ..            | 20            | 23 00             |
| Netherlands ... ..                         | 10            | 6 00              |
| Japan ... ..                               | 1,255         | 4,359 00          |
| Portugal ... ..                            | 425           | 288 00            |
| China ... ..                               | 11,386        | 19,662 00         |
| Surinam (Dutch Guiana) ... ..              | 1,320         | 1,197 00          |
| French Territories in North America ... .. | 2,200         | 580 00            |
|                                            | 118,725       | 63,016 00         |
| TOTAL ... ..                               | 6,863,725     | \$1,989,822 00    |

TABLE XXXV—PURCHASES OF LOCAL PRODUCE BY THE MARKETING BOARD

|                                | 1952<br>Short tons | 1953<br>Short tons | 1954<br>Short tons |
|--------------------------------|--------------------|--------------------|--------------------|
| Corn ... ..                    | 1,976              | 877                | 205                |
| Produce other than Corn ... .. | 615                | 998                | 813                |
|                                | 2,591              | 1,875              | 1,018              |

TABLE XXXVI—IMPORTS OF VEGETABLES AND FRUITS FROM B.W.I. TERRITORIES

|                         | 1951 Short<br>tons | 1952 Short<br>tons | 1953 Short<br>tons | 1954 Short<br>tons |
|-------------------------|--------------------|--------------------|--------------------|--------------------|
| Sweet Potatoes ... ..   | 1,206              | 1,178              | 2,425              | 3,478              |
| Yams ... ..             | 7                  | 20                 | —                  | 102                |
| Other vegetables ... .. | 5                  | 731                | 118                | 201                |
| Plantains ... ..        | 104                | 266                | 134                | 240                |
| Tomatoes ... ..         | Not recorded       | —                  | 33                 | 29                 |
| Fruit ... ..            | do.                | —                  | 872                | 1,392              |
|                         | 1,322              | 2,735              | 3,582              | 5,442              |

TABLE XXXVII—SHIPMENTS OF FOOD CROPS FROM TOBAGO TO TRINIDAD

|                          | 1951 Short<br>tons | 1952 Short<br>tons | 1953 Short<br>tons | 1954 Short<br>tons |
|--------------------------|--------------------|--------------------|--------------------|--------------------|
| Bananas ... ..           | 86                 | 32                 | 55                 | 73                 |
| Plantains ... ..         | 65                 | 11                 | 38                 | 12                 |
| Ground Provisions ... .. | 939                | 363                | 862                | 396                |
| Corn ... ..              | 51                 | 145                | 119                | 107                |
| Peas ... ..              | 5                  | 1                  | 10                 | 16                 |
|                          | 1,146              | 552                | 1,084              | 604                |

TABLE XXXVIII—SALES OF SEEDS AND PLANTING MATERIAL BY THE MARKETING BOARD

|                       | 1951     | 1952     | 1953     | 1954     |
|-----------------------|----------|----------|----------|----------|
|                       | \$       | \$       | \$       | \$       |
| Imported Seeds ... .. | 18,383   | 20,770   | 19,159   | 21,921   |
| Local Plants ... ..   | 2,805    | 11,207   | 1,578    | 2,627    |
|                       | \$21,188 | \$31,977 | \$20,737 | \$24,548 |

TABLE XXXIX—SALES OF FERTILIZERS AND INSECTICIDES BY THE MARKETING BOARD

|                                                | 1951 | 1952  | 1953  | 1954  |
|------------------------------------------------|------|-------|-------|-------|
|                                                | \$   | \$    | \$    | \$    |
| Fertilizers (short tons) ... ..                | 36   | 43    | 148   | 305   |
| Insecticides and Livestock<br>Medicines ... .. | 844  | 1,979 | 1,790 | 3,381 |

TABLE XL—SALES OF LIVESTOCK FEEDS BY THE MARKETING BOARD

|                       | 1952 Short<br>tons | 1953 Short<br>tons | 1954 Short<br>tons |
|-----------------------|--------------------|--------------------|--------------------|
| Dairy Ration ... ..   | 539                | 420                | 527                |
| Poultry Ration ... .. | 512                | 800                | 773                |
| Scratch Grain ... ..  | 275                | 338                | 560                |
| Pig Ration ... ..     | 401                | 488                | 725                |
|                       | 1,727              | 2,046              | 2,585              |

TABLE XLI—BUSINESS TURNOVER—MARKETING BOARD

| Year        | Business Turnover<br>\$ | Increase over<br>previous year's<br>% |
|-------------|-------------------------|---------------------------------------|
| 1950 ... .. | 611,202                 | —                                     |
| 1951 ... .. | 663,872                 | 9                                     |
| 1952 ... .. | 702,472                 | 6                                     |
| 1953 ... .. | 871,353                 | 24                                    |
| 1954 ... .. | 1,126,443               | 29                                    |

TABLE XLII—PRODUCTION, SALES AND DISTRIBUTION, 1954

| Crops                    | CONSUMPTION SALES     |               | PLANTING OR BREEDING<br>SALES |        |
|--------------------------|-----------------------|---------------|-------------------------------|--------|
|                          | Number                | Unit          | Number                        | Unit   |
| Avocadoes ... ..         | 895 }<br>241 }        | lb.<br>only   | 8,910                         | plant  |
| Breadfruit ... ..        | 156                   | only          | —                             | "      |
| Cacao ... ..             | 131,238               | lb.           | —                             | "      |
| Coconuts ... ..          | 57,049                | only          | 615                           | "      |
| Coffee ... ..            | 19,487                | lb.           | 5,704                         | "      |
| Grapefruit ... ..        | 1,261 }<br>295,864 }  | crate<br>only | 24,826                        | "      |
| King Oranges ... ..      | 5,872                 | only          | 34                            | "      |
| Lemons ... ..            | 2,131                 | "             | —                             | "      |
| Limes ... ..             | 9,368                 | lb.           | 14,277                        | "      |
| Mangoes ... ..           | 5,631                 | only          | 4,756                         | "      |
| Oranges ... ..           | 5 }<br>1,146,914 }    | crate<br>only | 70,969                        | "      |
| Banana ... ..            | 53,665 }<br>123,746 } | hand<br>lb.   |                               |        |
|                          | 254 }                 | bunch         | 306                           | sucker |
| Plantain ... ..          | 9,827                 | lb.           | 713                           | "      |
| Pineapple ... ..         | 472.75                | "             | 55                            | lb.    |
| Other Fruit Trees ... .. | 1,387                 | only          | 315                           | plant  |
| Portugals ... ..         | 2,345                 | "             | 551                           | "      |

TABLE XLII.—PRODUCTION, SALES AND DISTRIBUTION 1954—*Continued*

| Crops                               | CONSUMPTION SALES |           | PLANTING OR BREEDING SALES |           |
|-------------------------------------|-------------------|-----------|----------------------------|-----------|
|                                     | Number            | Unit      | Number                     | Unit      |
| Tangerines ... ..                   | 12                | only      | 187                        | plant     |
| Beans ... ..                        | 122               | lb.       | —                          | —         |
| Cassava ... ..                      | 51,461            | "         | —                          | stem      |
| Dasheen ... ..                      | 1,389             | "         | —                          | sucker    |
| Eddoes ... ..                       | 182               | "         | —                          | "         |
| Grass—Elephant ... ..               | —                 | "         | 3,000                      | plant     |
| Uganda ... ..                       | 15,225            | "         | —                          | lb.       |
| Khus Khus ... ..                    | 4,000             | plant     | —                          | plant     |
| Kudzu ... ..                        | 321               | lb.       | 166                        | lb.       |
| Maize (corn) ... ..                 | 282½              | cob       | —                          | "         |
|                                     | 57,244.5½         | lb.       | —                          | "         |
| Melons ... ..                       | 20,494            | lb. seed  | 6.8                        | lb. seed  |
| Peas—Pigeon ... ..                  | 1,071.25          | lb.       | —                          | lb.       |
| Peas—other ... ..                   | 1,653             | "         | —                          | "         |
| Pumpkins ... ..                     | 673               | "         | —                          | lb. seed  |
| Rice ... ..                         | 107,629½          | "         | —                          | "         |
|                                     | 21,653½           | lb. paddy | 37,594                     | lb. paddy |
| Sugarcane ... ..                    | 1,741             | ton       | —                          | ton       |
| Sweet Potatoes ... ..               | 9,900.5           | lb.       | 48                         | lb.       |
| Tannias ... ..                      | 1,763             | "         | —                          | sucker    |
| Timber ... ..                       | 1,005             | cu. ft.   | —                          | cu. ft.   |
| Vegetable (fresh) ... ..            | 101,098½          | only      | —                          | only      |
|                                     | 28,341½           | lb.       | —                          | lb.       |
| Vegetable seedlings ... ..          | —                 | only      | 1,112                      | only      |
| Vegetable seedlings (boxes) ... ..  | —                 | box       | 8,089                      | box       |
| Yams ... ..                         | 59,839            | lb.       | 244                        | plant     |
| Lettuce ... ..                      | 16,158            | head      | —                          | head      |
| Bene ... ..                         | 7                 | lb.       | —                          | lb.       |
| Copra ... ..                        | 27,151            | "         | —                          | "         |
| Ornamental seedlings (boxes) ... .. | —                 | box       | 6,388                      | box       |
| Palms and ornamental shrubs ... ..  | —                 | only      | 35,223                     | only      |
| Trees ... ..                        | 14                | "         | 13,041                     | "         |
| Moss ... ..                         | —                 | bag       | 12                         | bag       |
| <i>Stockfeed</i>                    |                   |           |                            |           |
| Citrus Pulp Meal ... ..             | 309,531           | lb.       | —                          | lb.       |
| Dairy Feed ... ..                   | 1,054,427         | "         | —                          | "         |
| Growing Mash ... ..                 | 665,480           | "         | —                          | "         |
| Laying Mash ... ..                  | 880,836           | "         | —                          | lb.       |
| Pig Ration ... ..                   | 1,450,783         | "         | —                          | "         |
| Scratch Grain ... ..                | 1,119,750         | "         | —                          | "         |
| Chlordane ... ..                    | 4,210             | pint      | —                          | pint      |
| Fertilisers ... ..                  | 763,480           | lb.       | —                          | lb.       |
| <i>Cattle</i>                       |                   |           |                            |           |
| Bulls ... ..                        | 21                | head      | 13                         | head      |
| Cows ... ..                         | 17                | "         | 1                          | "         |
| Steers ... ..                       | 4                 | "         | —                          | "         |
| Bull calves ... ..                  | 14                | "         | 36                         | "         |
| Heifers ... ..                      | 14                | "         | 15                         | "         |
| Beef ... ..                         | 19,750            | lb.       | —                          | lb.       |
| Milk ... ..                         | 84,710.8          | gal.      | —                          | gal.      |



TABLE XLII—PRODUCTION, SALES AND DISTRIBUTION 1954—Continued

| Crops                       | CONSUMPTION SALES |      | PLANTING OR BREEDING SALES |      |
|-----------------------------|-------------------|------|----------------------------|------|
|                             | Number            | Unit | Number                     | Unit |
| <i>Horses</i>               |                   |      |                            |      |
| Mares ... ..                | —                 | only | 1                          | only |
| Colts ... ..                | —                 | "    | 6                          | "    |
| Fillies ... ..              | —                 | "    | 2                          | "    |
| Geldings ... ..             | —                 | "    | 1                          | "    |
| Mules ... ..                | —                 | "    | 5                          | "    |
| <i>Donkeys</i>              |                   |      |                            |      |
| Jacks ... ..                | —                 | "    | 2                          | "    |
| <i>Pigs</i>                 |                   |      |                            |      |
| Boars ... ..                | 40                | "    | 231                        | "    |
| Sows ... ..                 | 43                | "    | 34                         | "    |
| Barrows ... ..              | 2                 | "    | —                          | "    |
| Gilts ... ..                | 7                 | "    | 481                        | "    |
| Pork ... ..                 | 5,020             | lb.  | —                          | lb.  |
| <i>Sheep</i>                |                   |      |                            |      |
| Rams ... ..                 | 6                 | only | 1                          | only |
| Ewes ... ..                 | —                 | "    | 43                         | "    |
| Ram lambs ... ..            | 46                | "    | —                          | "    |
| Ewe lambs ... ..            | —                 | "    | 14                         | "    |
| <i>Goats</i>                |                   |      |                            |      |
| Bucks ... ..                | 10                | "    | 2                          | "    |
| Does ... ..                 | 19                | "    | —                          | "    |
| Bucklings ... ..            | 1                 | "    | 4                          | "    |
| Goatlings ... ..            | 2                 | "    | 11                         | "    |
| Buck kids ... ..            | 12                | "    | 3                          | "    |
| Mutton ... ..               | 319               | lb.  | —                          | lb.  |
| <i>Rabbits</i>              |                   |      |                            |      |
| Bucks ... ..                | 23                | only | 48                         | only |
| Does ... ..                 | 5                 | "    | 56                         | "    |
| Bunnies ... ..              | —                 | "    | 69                         | "    |
| <i>Poultry</i>              |                   |      |                            |      |
| Cocks ... ..                | 80                | "    | 76                         | "    |
| Hens ... ..                 | 113               | "    | 69                         | "    |
| Pullets ... ..              | 3                 | "    | 31                         | "    |
| Cockerels ... ..            | 11                | "    | —                          | "    |
| Cockerels (exchange) ... .. | —                 | "    | 429                        | "    |
| Chicks, unsexed ... ..      | —                 | "    | 1,855                      | "    |
| Guinea Pig ... ..           | —                 | "    | 2                          | "    |
| Dressed Poultry ... ..      | —                 | lb.  | 635                        | lb.  |
| Eggs ... ..                 | 3,891             | doz. | 596                        | doz. |
| Drakes ... ..               | 23                | only | 36                         | only |
| Ducks ... ..                | 27                | "    | 50                         | "    |
| Ducklings ... ..            | 2                 | "    | 24                         | "    |

## WEIGHTS AND MEASURES

|            |   |                   |
|------------|---|-------------------|
| 4 drams    | = | 1 ounce (oz.)     |
| 16 ounces  | = | 1 pound (lb.)     |
| 28 pounds  | = | 1 quarter (qr.)   |
| 4 quarters | = | 1 cwt. (112 lb.)  |
| 20 cwt.    | = | 1 ton (2,240 lb.) |

---

|          |   |                     |
|----------|---|---------------------|
| 2 pints  | = | 1 quart             |
| 4 quarts | = | 1 gallon (Imperial) |

---

(1) *Cacao* :

|          |   |                     |
|----------|---|---------------------|
| 1 fanega | = | 110 lb.             |
| 1 bag    | = | 200 lb. (dry cocoa) |

(2) *Rice* :

|                                                                                              |   |         |
|----------------------------------------------------------------------------------------------|---|---------|
| 1 barrel paddy                                                                               | = | 160 lb. |
| (as milled locally at present, without parboiling, provides approximately 80 lb. clean rice) |   |         |

(3) *Citrus* :

|                                         |      |                   |
|-----------------------------------------|------|-------------------|
| Average Weight—Standard Field Crate     | —    | Grapefruit 80 lb. |
|                                         |      | Oranges 100 „     |
| Average Fruit—Standard Field Crate      | —    | Grapefruit 80 lb. |
|                                         |      | Oranges 200 lb.   |
| Average Weight—Shipping Crate           | —    | Grapefruit 80 lb. |
|                                         |      | Oranges 90 „      |
| Average Fruit—Shipping Crate            | —    | Grapefruit 80 lb. |
|                                         |      | Oranges 200 „     |
| Weight Canned Juice—Case of 24 x 20 oz. | cans | 38 „ gross        |
| Weight of Fruit—Per case of fruit       | —    | Grapefruit 72 lb. |
|                                         |      | Oranges 80 „      |
| Average Weight of Standard Field Crate  | —    | 80 „              |

(4) *Limes* :

|          |   |         |
|----------|---|---------|
| 1 barrel | — | 160 lb. |
|----------|---|---------|



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